

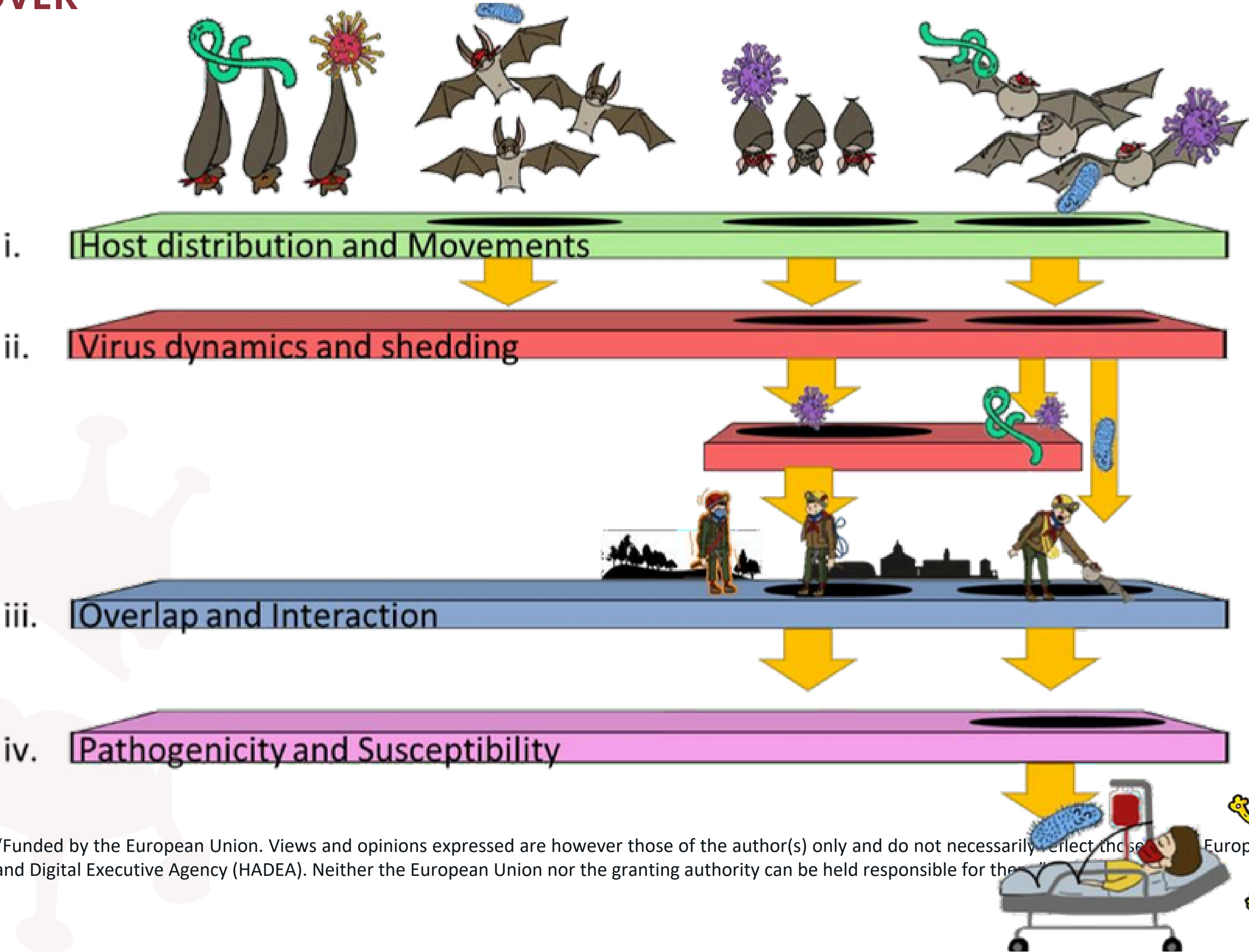


OneBAT Training course

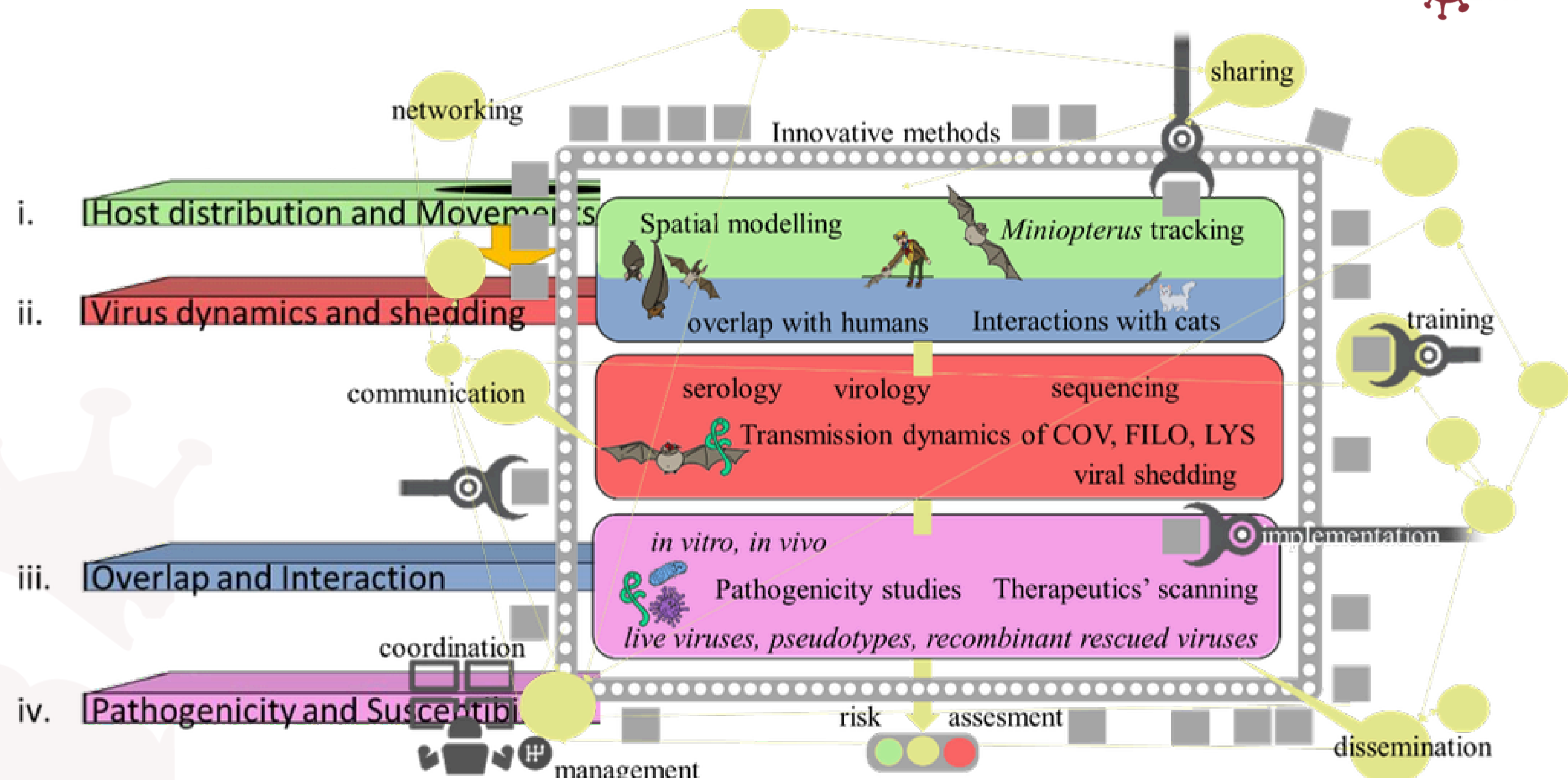


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The SPILLOVER

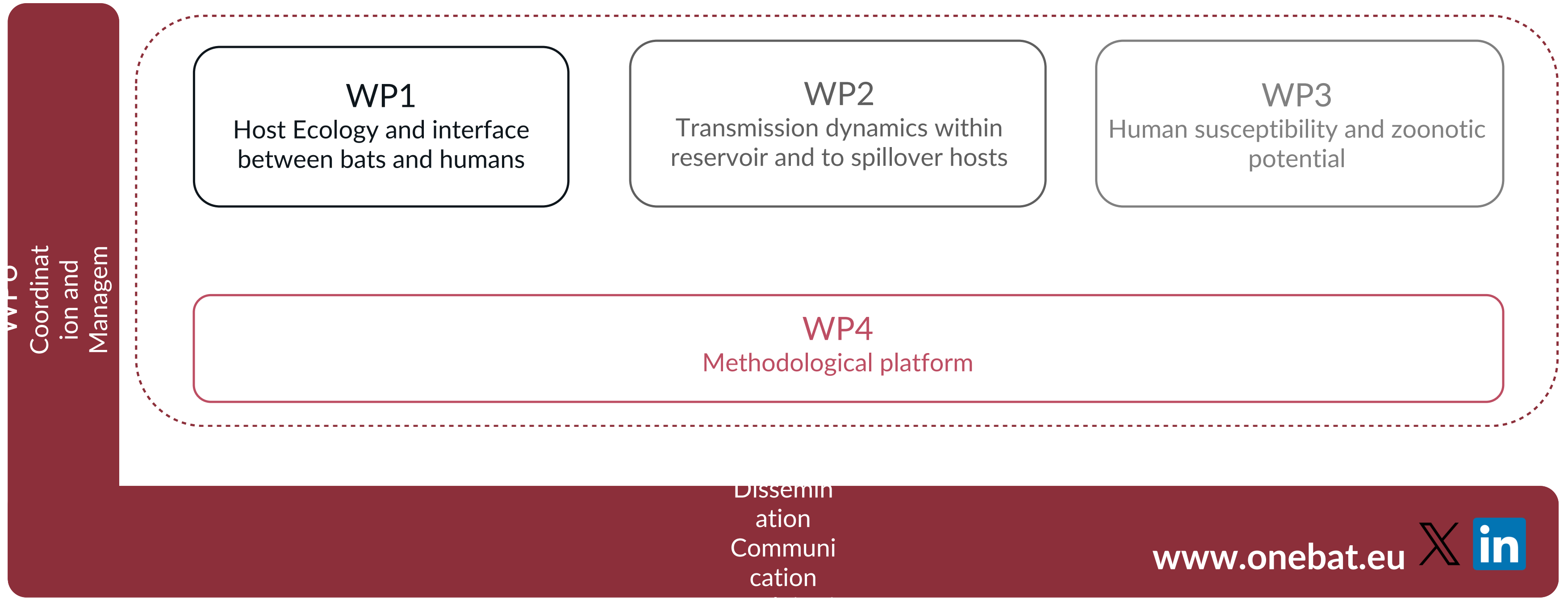


Tracing the SPILLOVER in OneBAT



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<https://youtu.be/Kh1gPzKLNdK>

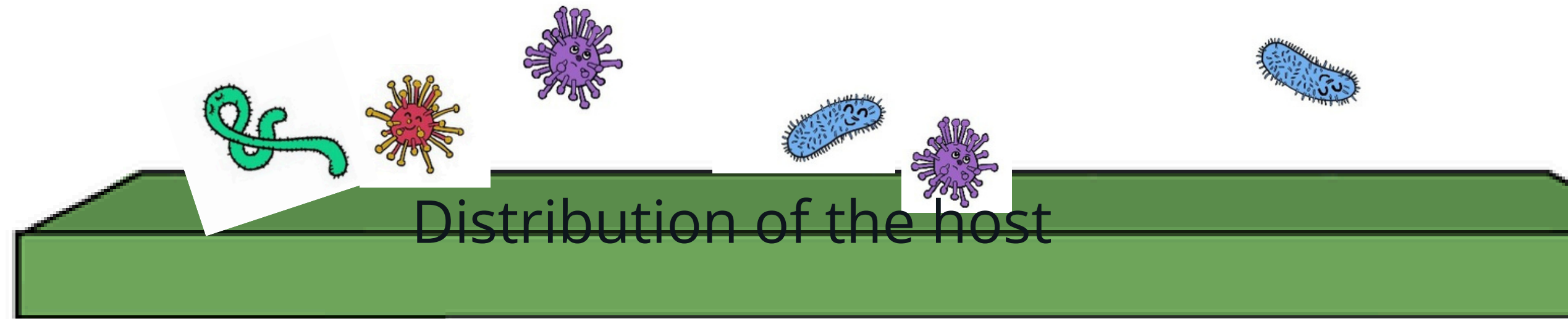


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The OneBAT Consortium – 13 partners

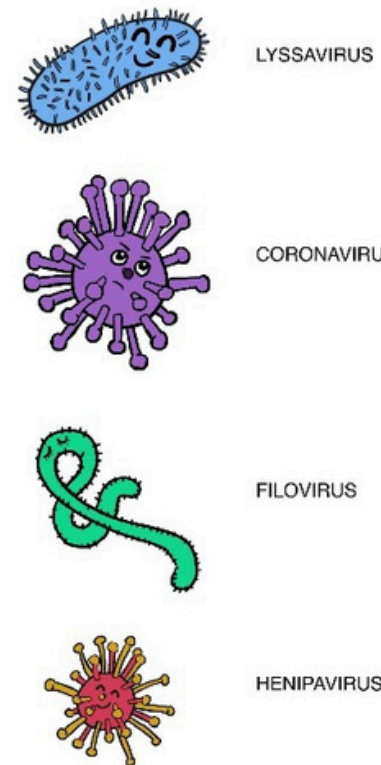


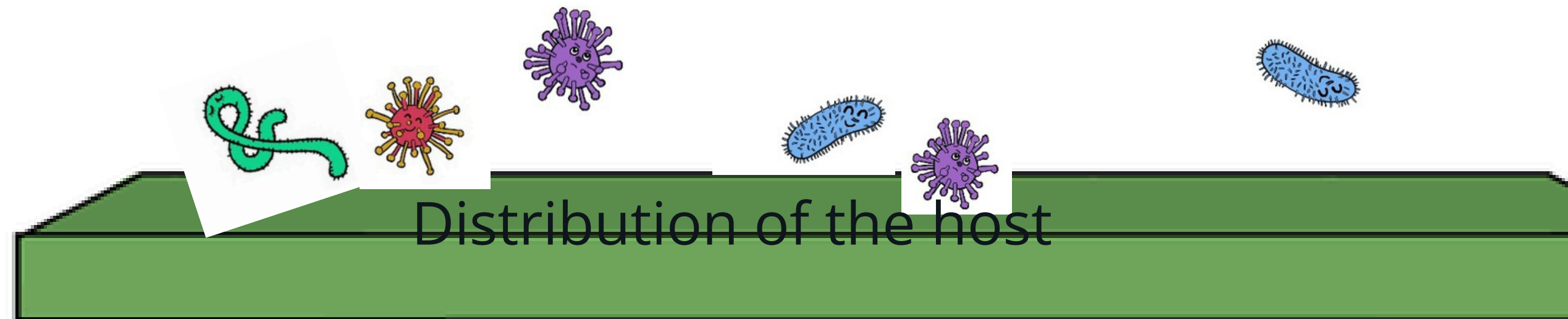
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In Europe there are 53 species of bats

No Henipavirus discovered so far

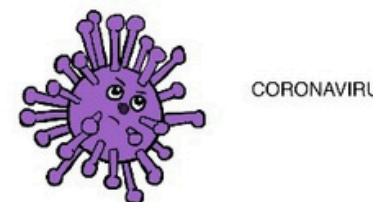




We selected *Miniopterus schreibersii* (and on three viruses) to focus on patterns of spillover rather than dispersing efforts



LYSSAVIRUS



CORONAVIRUS

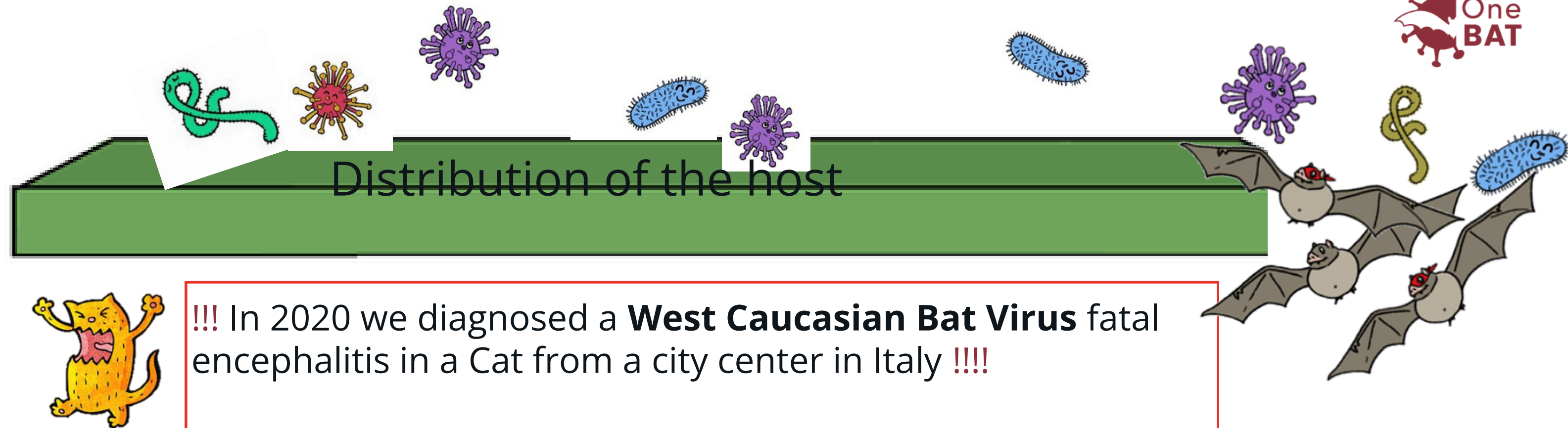


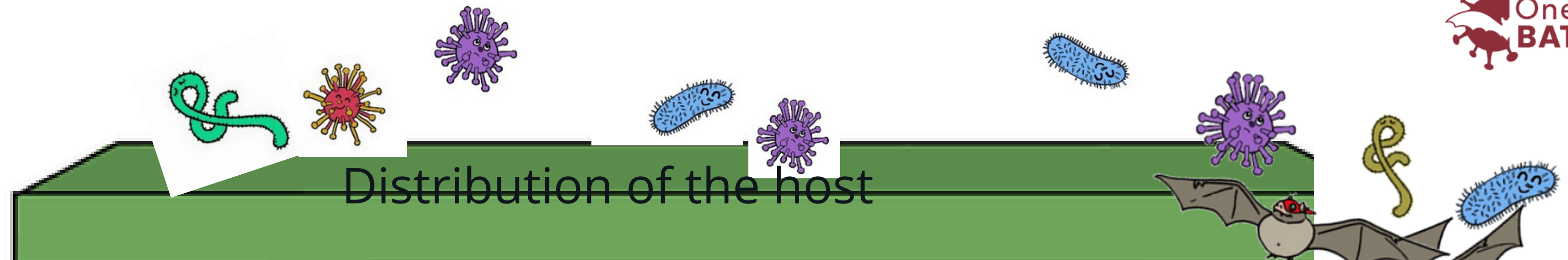
FILOVIRUS



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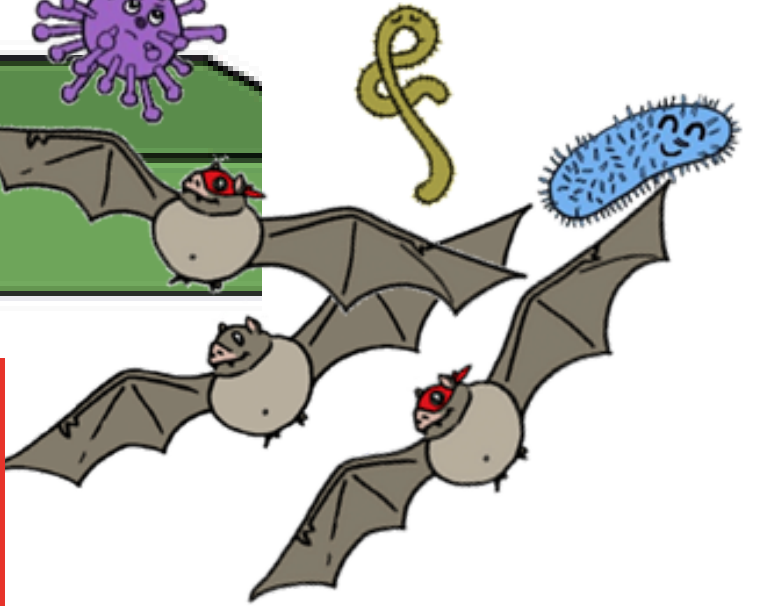




Distribution of the host



!!! In 2020 we diagnosed a **West Caucasian Bat Virus** fatal encephalitis in a Cat from a city center in Italy !!!!




Exposure of Novel
hosts



Host Distribution

European range of 7 key bat species

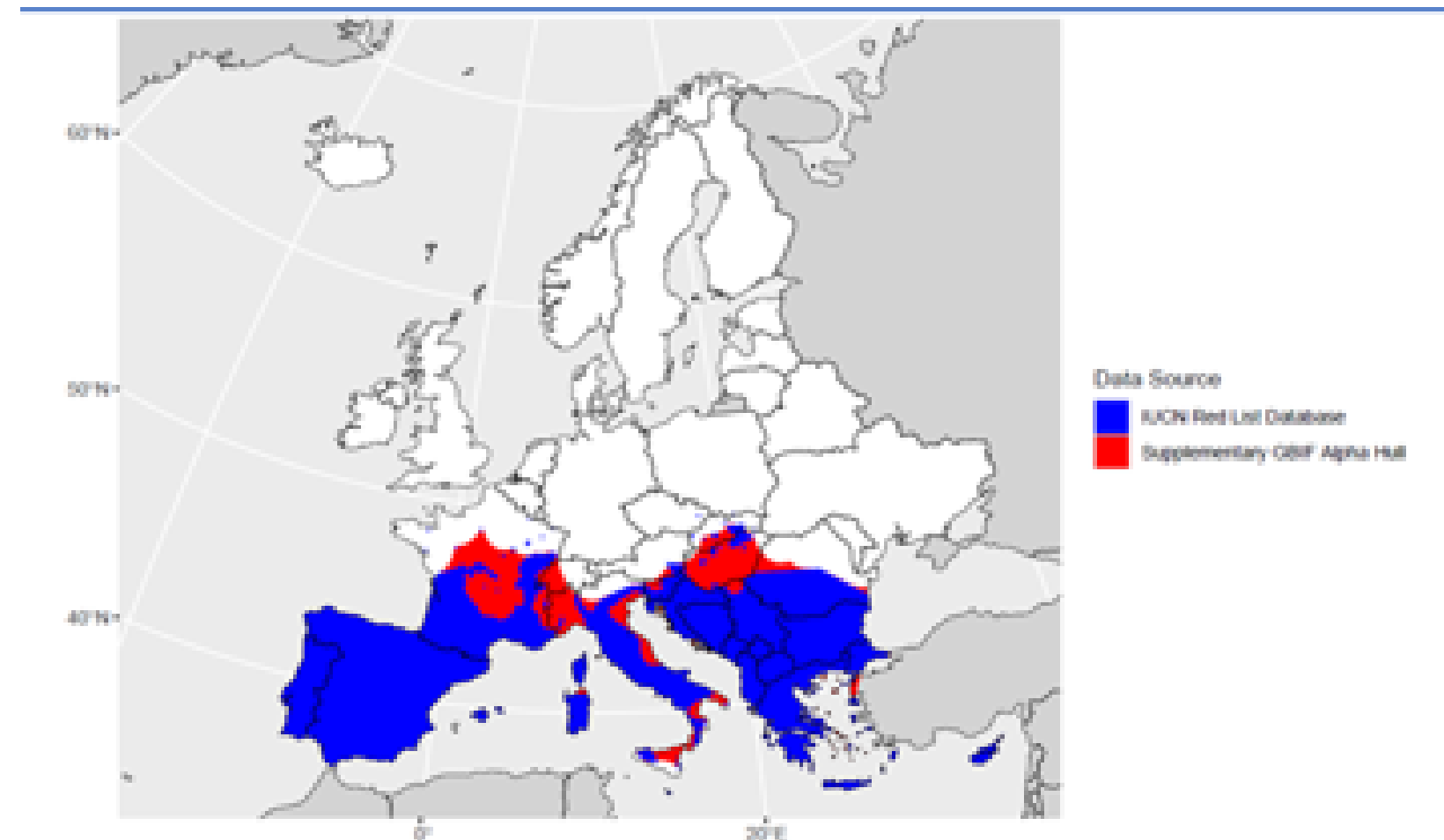


**Fiona
Mathews**
WP1 Leader



Seven key species initially selected as:

- potential reservoir hosts for high priority pathogens,
- or because of their extensive use of synanthropic roosts



Miniopterus schreibersii's geographical range



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Identifying **hotspots** of bat-human/bat-domestic interface *Miniopterus schreibersii* in Italy



- North-east regions, the Tirrenian coast, Puglia region, Nord-west Sardinia and all the South of Sicily are **the most suitable habitats**
- **Urban colonies** included in the study have low suitability values based on the model

Species Distribution Model



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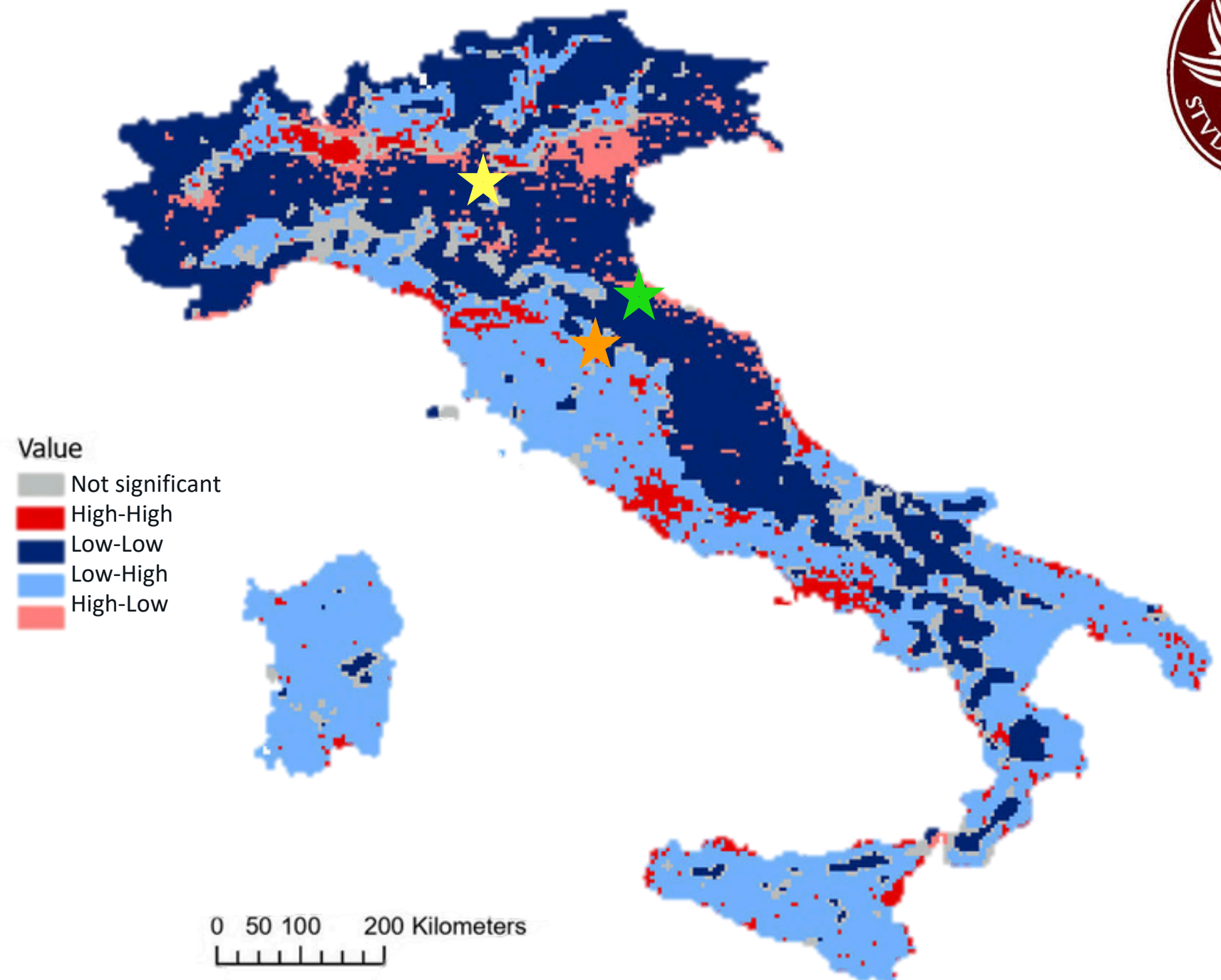
"Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Health and Digital Executive Agency (HADEA). Neither the European Union nor the granting authority can be held responsible for them."

Festa et al., 2026

Identifying **hotspots** of bat-human/bat-domestic interface *Miniopterus schreibersii* in Italy

- We used **LISA** to identify hotspot to target roost search and test new hypotheses
- We highlighted areas of interface in proximity of Milan, Florence, Rome and Naples
- One urban colony has high values of LISA

Arezzo



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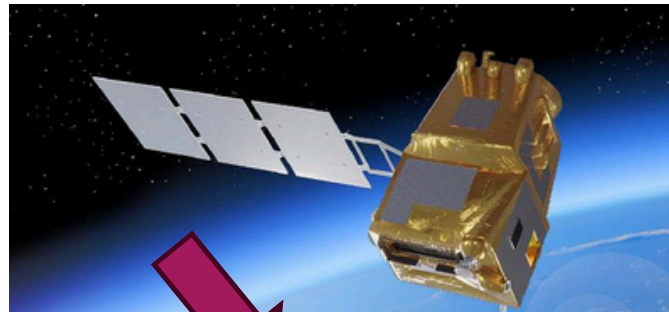
“Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Health and Digital Executive Agency (HADEA). Neither the European Union nor the granting authority can be held responsible for them.”

Identifying **hotspots** of bat-human/bat-domestic interface

Host Distribution

Night-time temperatures

Night-time Land Surface Temperature
Li et al., (2023)



Layered daily satellite images



Minimum, Maximum, Mean
Winter, Summer

Indicators of roost availability

OpenStreetMa

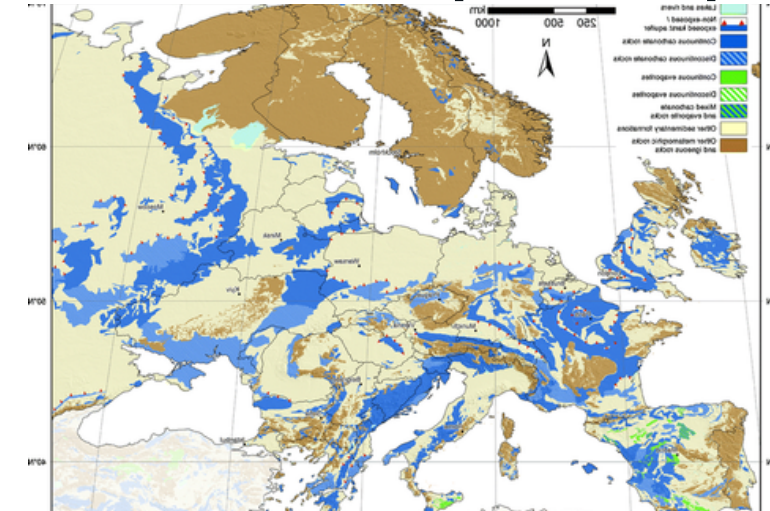


Building Height

Mine entrances
Historic
buildings
Castles
Forts



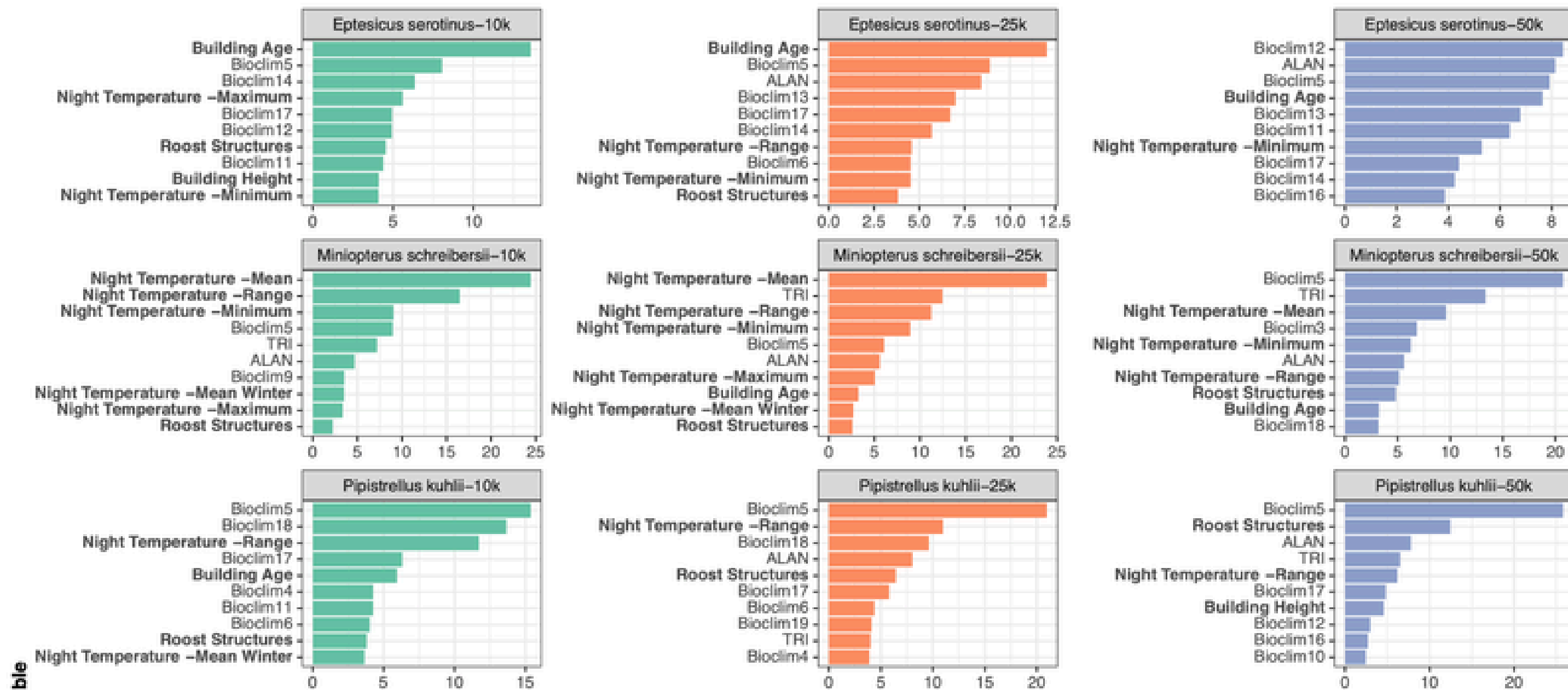
World Karst Aquifer Map



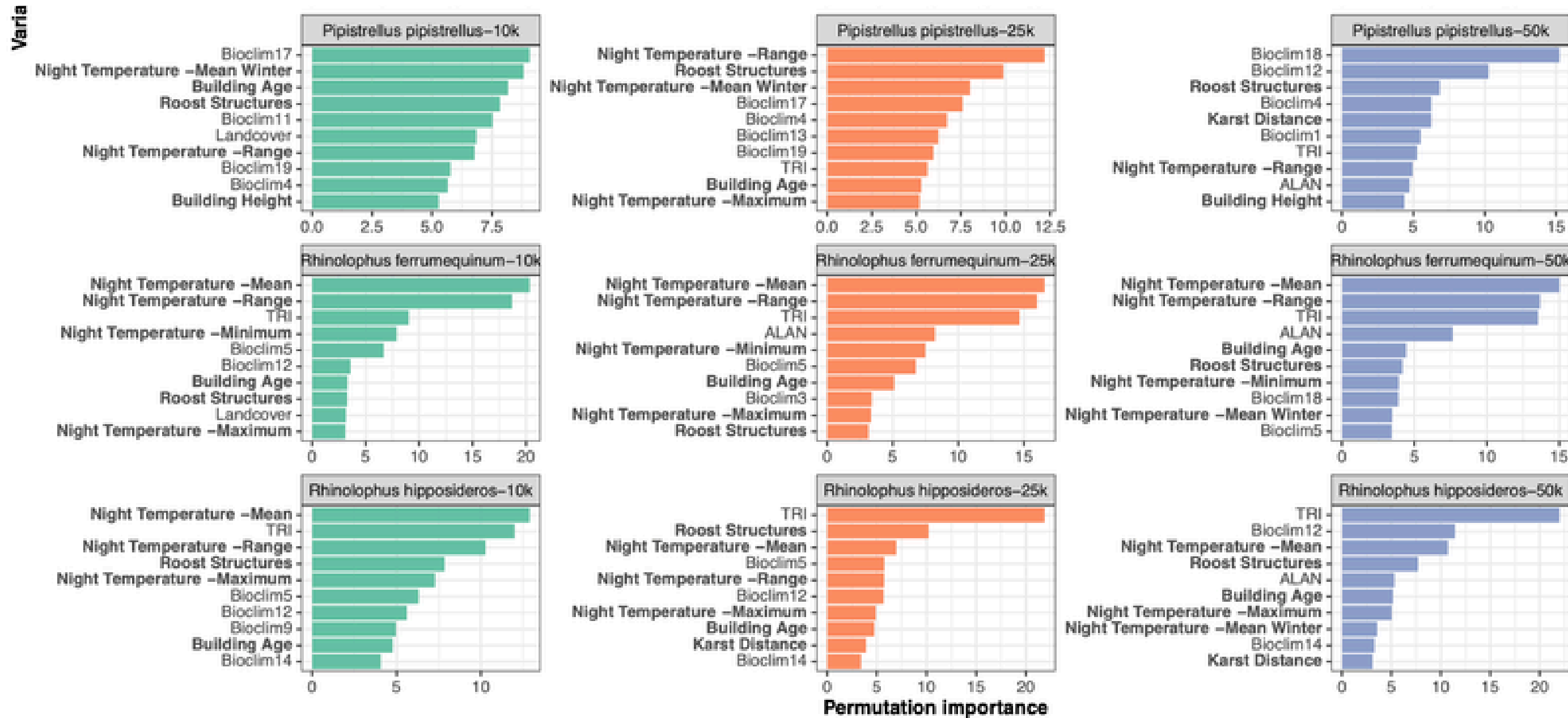
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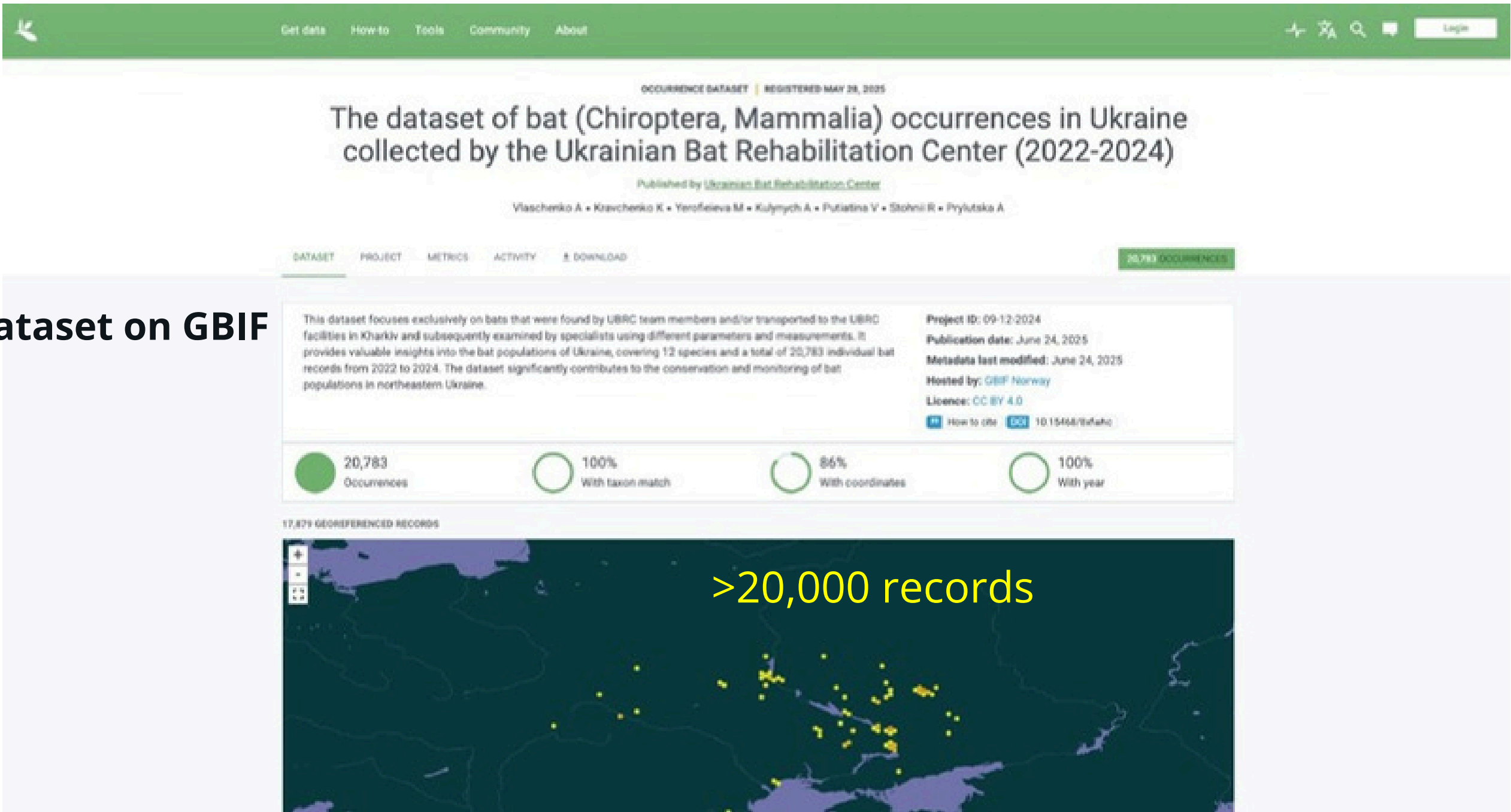
- Novel environmental indicators consistently among the **most important predictors** of bat distribution!
- Relative importance of different variables highly dependent on **species** and **scale**.



- Novel environmental indicators consistently among the **most important predictors** of bat distribution!
- Relative importance of different variables highly dependent on **species** and **scale**.

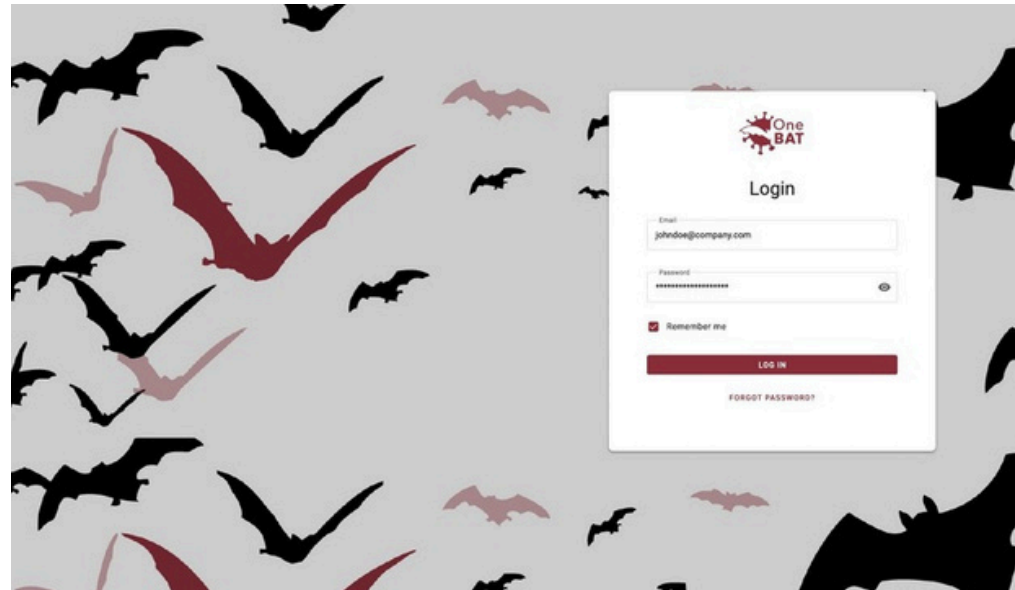


Identifying **hotspots** of bat-human/bat-domestic interface



We combined the use of **pit tagging** and VHF tagging

Host Movement



- Sharing a common consortium database of tagged animals
- to feed capture-mark-recapture studies
 - to understand colonies origins / mixing / migration pathways across Europe



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MINISTRY OF AGRICULTURE
RURAL DEVELOPMENT
AND THE ENVIRONMENT

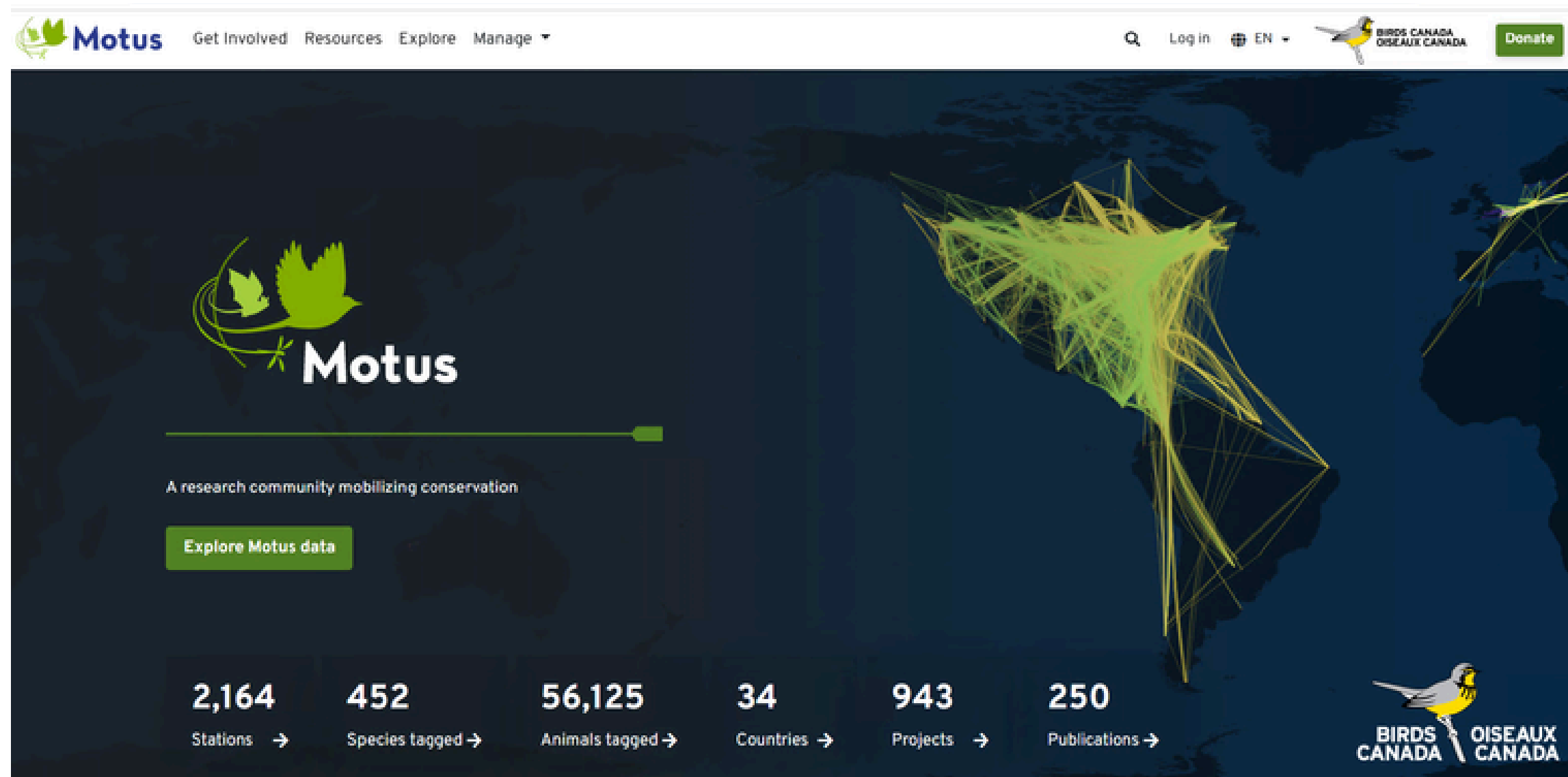


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We combined the use of pit tagging and **VHF tagging**

Host Movement



Installing a number of [Motus Antennas](#) covering the area of the partners:

- setting the tool to investigate miniopterus movements across sites and across Europe
- implementing tools in the areas for other species other topics



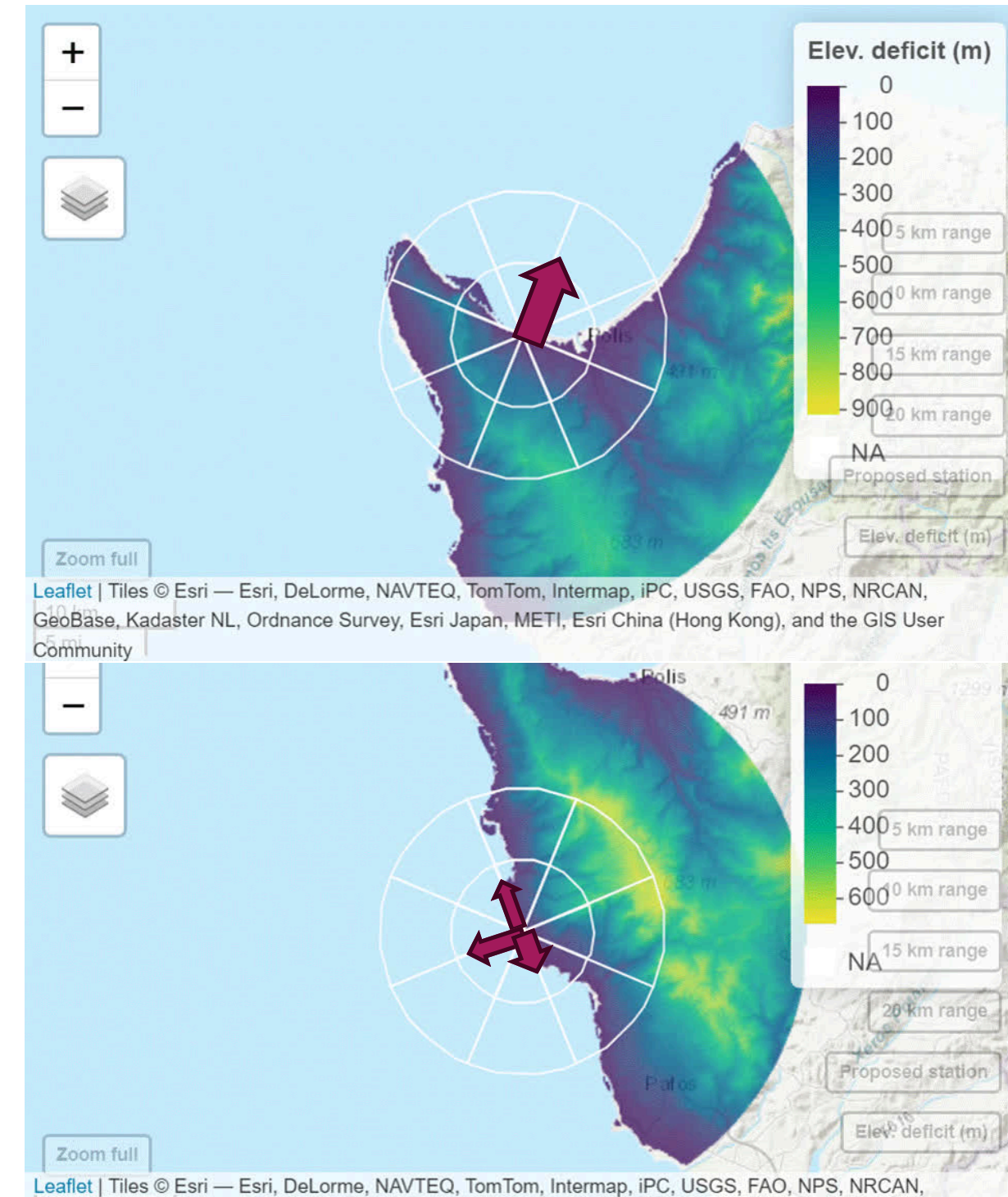
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Host Movement

We combined the use of pit tagging and VHF tagging

1. Identification of potential sites in France, Italy, Spain, Hungary and Cyprus
2. Modelling of antennas' reception from the sites



We combined the use of pit tagging and **VHF tagging**



3. first Motus antenna installed in Northern Spain **!!! May 2025**

4. Hungary
and Northern France
ongoing

ID#	Short name	Project name	Description	Project access
991	OneBat	ONE HEALTH APPROACH TO UNDERSTAND, PREDICT AND PREVENT VIRAL EMERGENCIES FROM BATS	The OneBAT project aims to explore the complex interaction between bats, pathogens, and environment	Open Summary Data



Interface



Online survey





Cat predation on bats in Europe: Insights from bat care

Are you a rescue centre, veterinarian or volunteer involved in the care of sick or injured bats?

Take part in our survey!

We need your input to understand how cats are affecting bats across Europe



QR code to access survey

For more information:
<https://catbatpredation.wordpress.com>
 or contact us directly:
Bronwen.Hunter@sussex.ac.uk






Photo tracking



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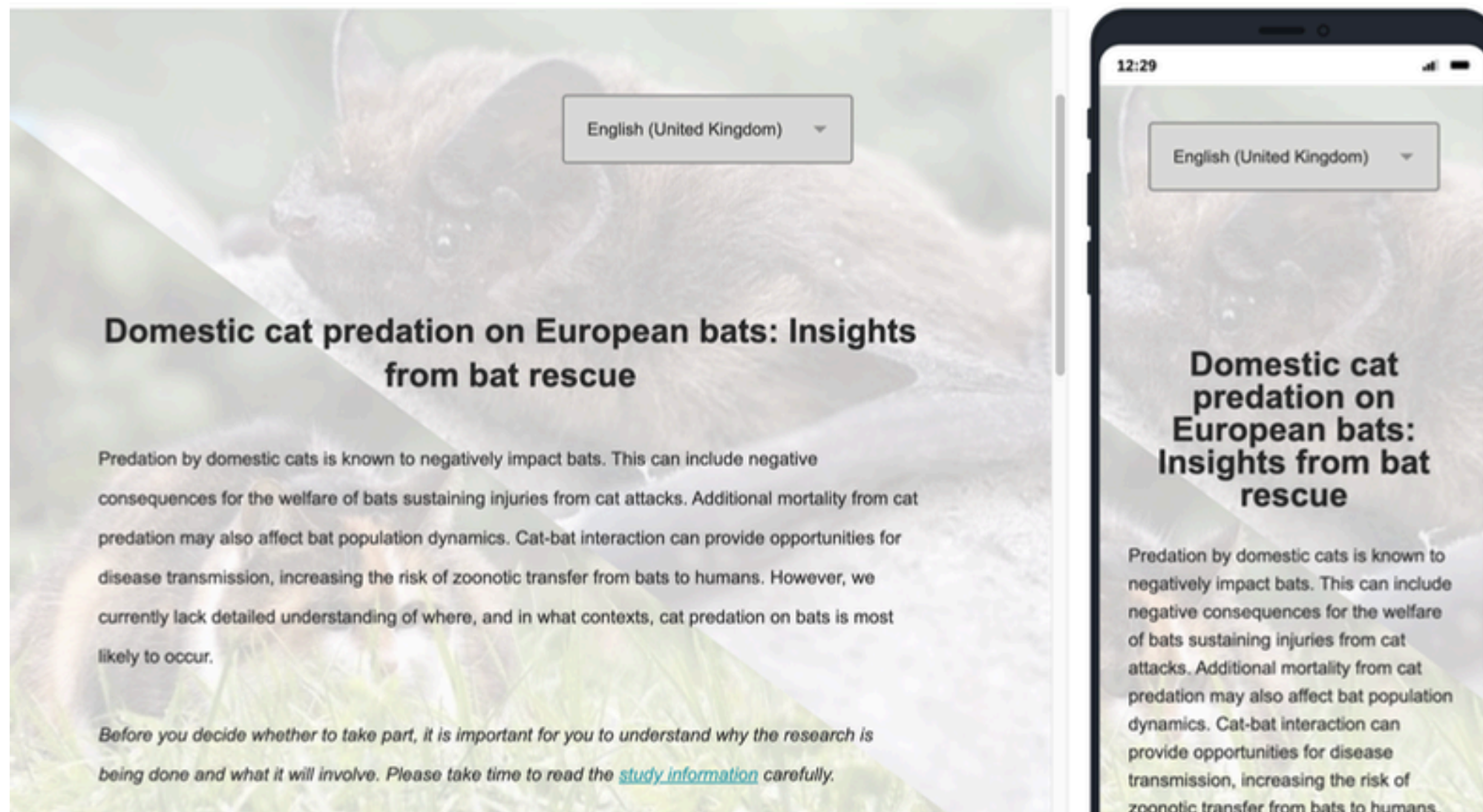


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Possible interaction leading to exposure of **humans** and **terrestrial animals** – Online survey

Interface



- **Online questionnaire survey** distributed via Qualtrics
- Survey translated into **13 languages**, to ensure wide reach across Europe

Survey participants recruited through social media, partner contacts and **OneBAT webinar**

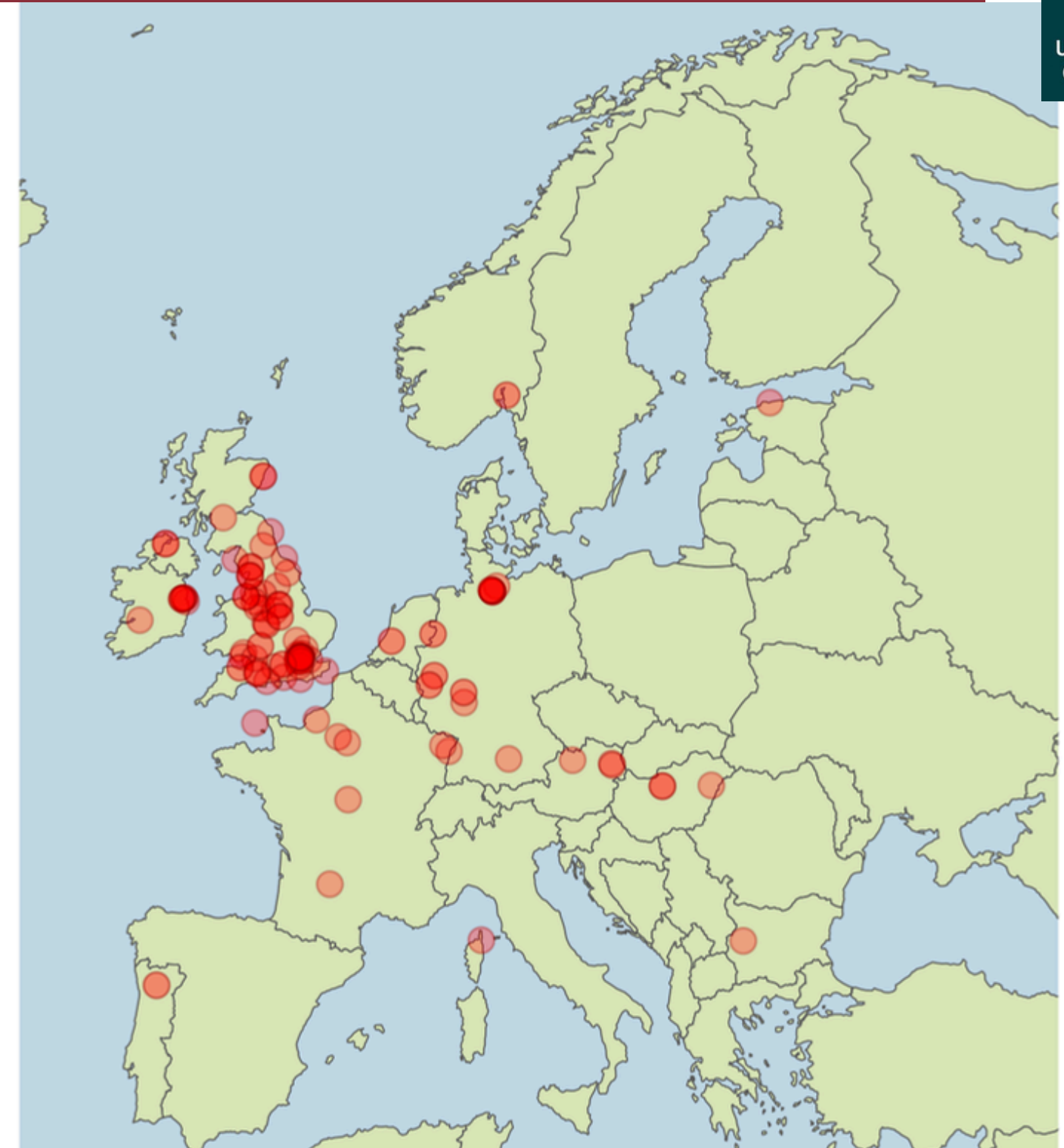


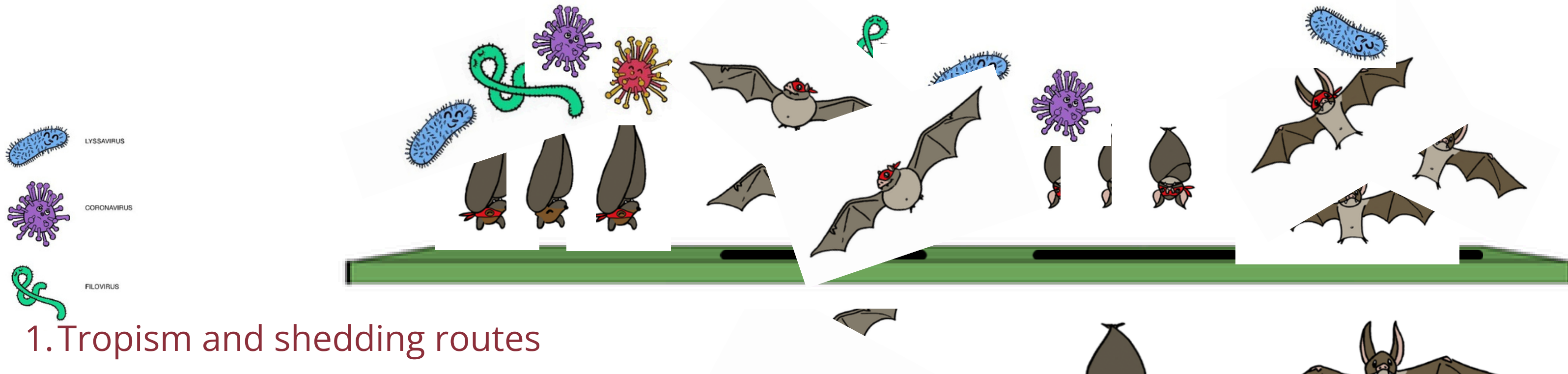
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Interface

- **72 responses** (51 complete) to main questionnaire; **23 responses** to mini questionnaire.
- Responses gathered from **12 countries** but vast majority from UK.
- Individuals/organisations responding to survey cared for median of **46 bats** over 12 months.
- Species most frequently admitted to care for any reason was ***Pipistrellus pipistrellus*** (potentially a result of UK bias).
- The mean proportion of bats admitted care that had been attacked by cats was **31.2%**.





1. Tropism and shedding routes

2. Prevalence

3. Seasonality



Supposed salivary shedding
Low prevalence
Consistent seasonality



Fecal (and Respiratory?) shedding
High prevalence



Shedding TBD
Low prevalence



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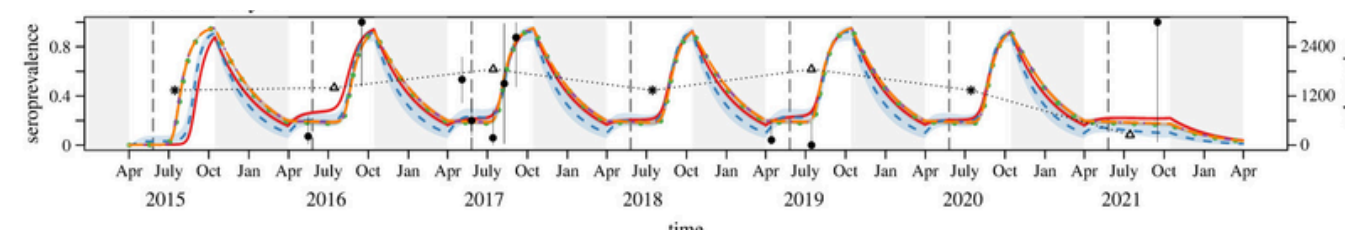
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Harmonized longitudinal surveillance across 5 countries



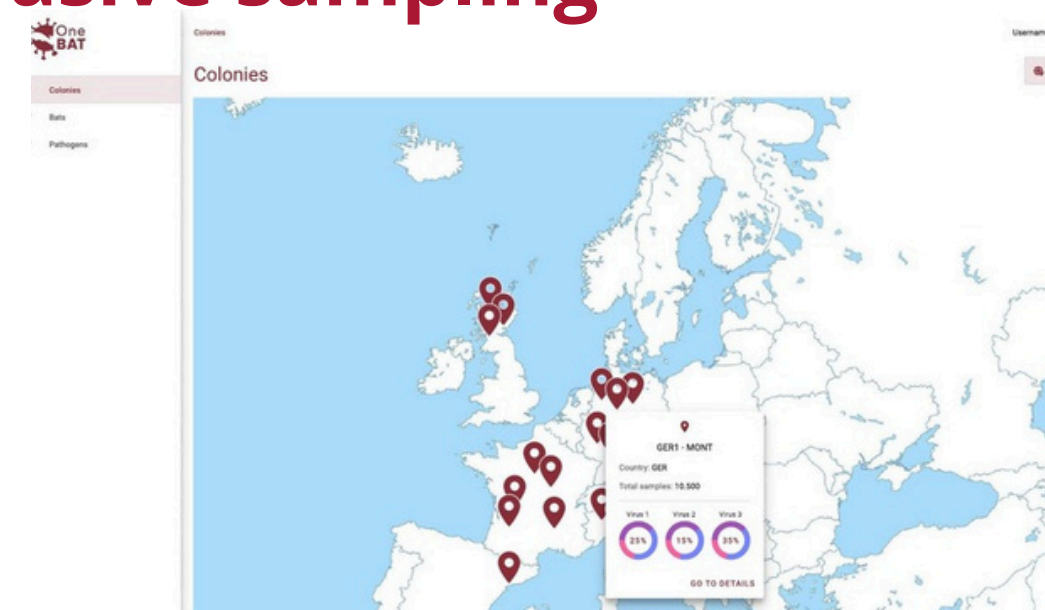
**Pierre
Nouvellet**
WP2 Leader

Modelling of pathogens dynamics in the reservoir species



Investigating the feasibility of adopting non-invasive sampling

WP4
Methodological platform
Web portal



Harmonized longitudinal surveillance across 5 countries

Virus ecology - methodology



M2 – Action Plan for harmonized active surveillance, diagnostic protocols and flow



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Document Log

Version	Date	Description of Change
V1.0	24/01/2023	First draft by Pierre Nouvellet (SU)
	25/01-22/02/2023	Contribution by all Partners involved in WP2
V2.0	23/02/2024	Formatted Draft by Stefania Leopardi (IZSVe)
	28/02-21/03/2024	Contribution by all Partners involved in WP2
	22/03/2024	Final version submitted as milestone2
V3.0	22/05-05/06/2024	Revision based on comments from ethical board - contribution by all Partners involved in WP2



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Harmonized longitudinal surveillance across 5 countries



Virus ecology - methodology

Molecular methods

Quality assessment:

- Organised by IP in collaboration with ANSES showed good assay performance but some lab variability, especially for coronaviruses.

Standard control:

- The consortium used a shared RNA reference sample spiked into bat feces to ensure consistent results across partners.

Strategy refinement:

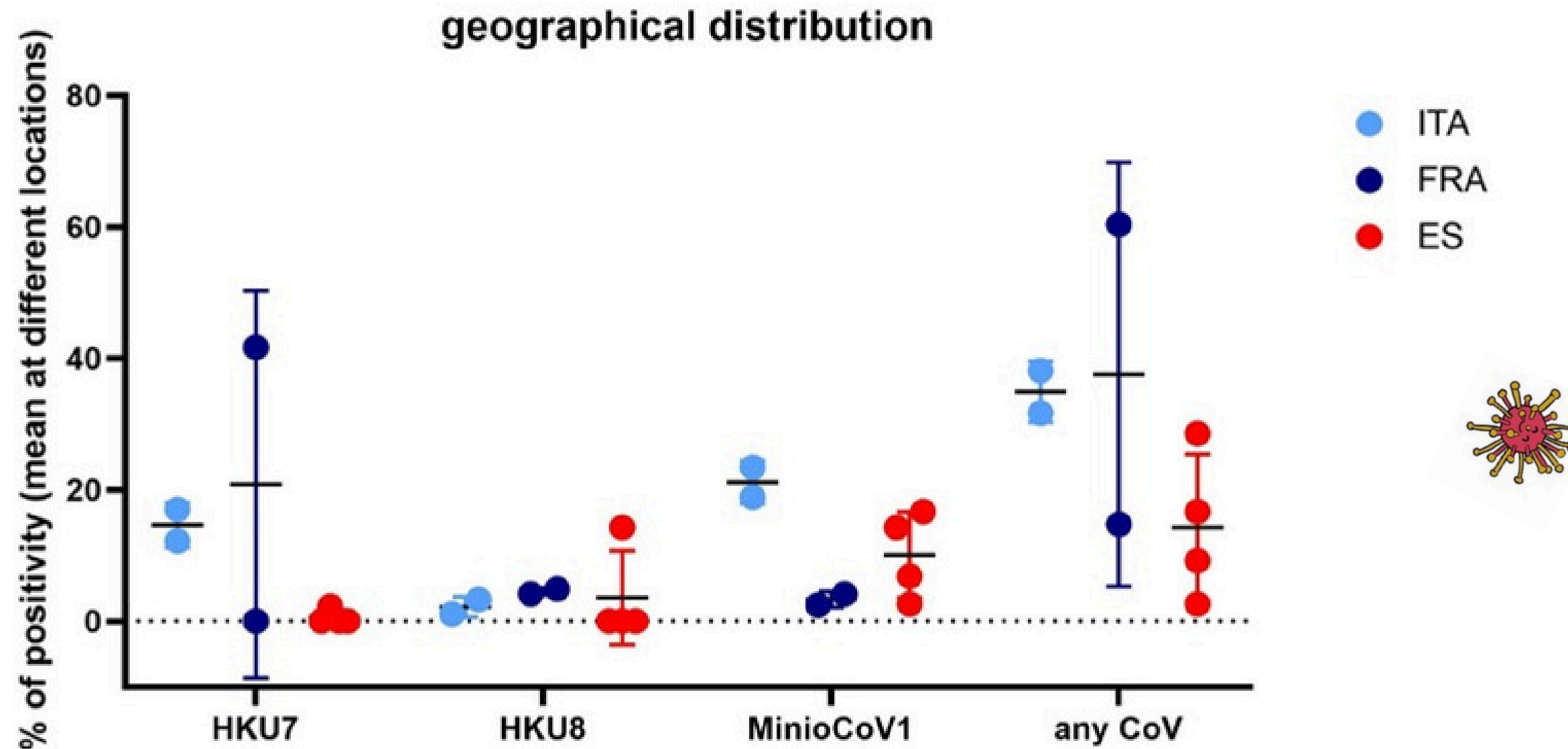
- Early data informed adjustments for year two, including sample types and sizes.

Assay implementation:

- Labs began using validated methods for all three virus groups.

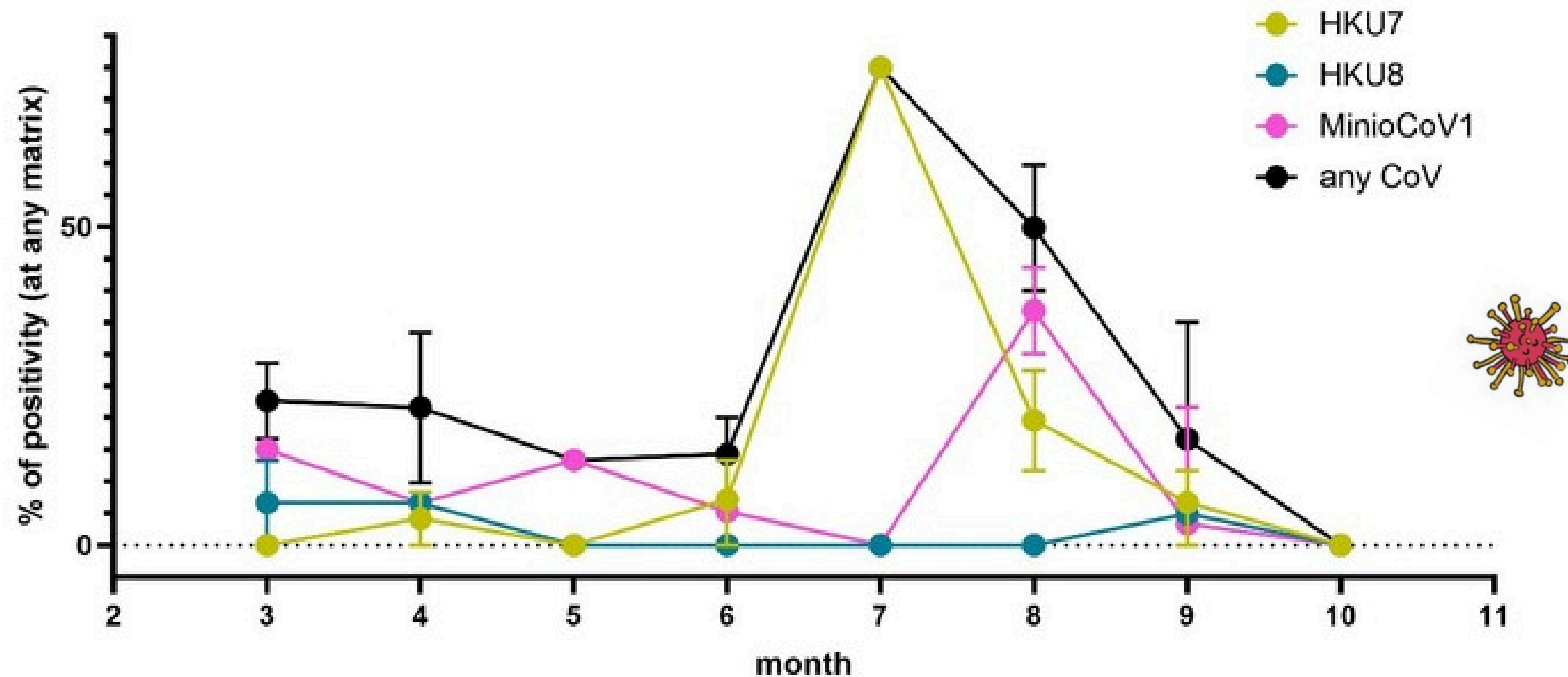


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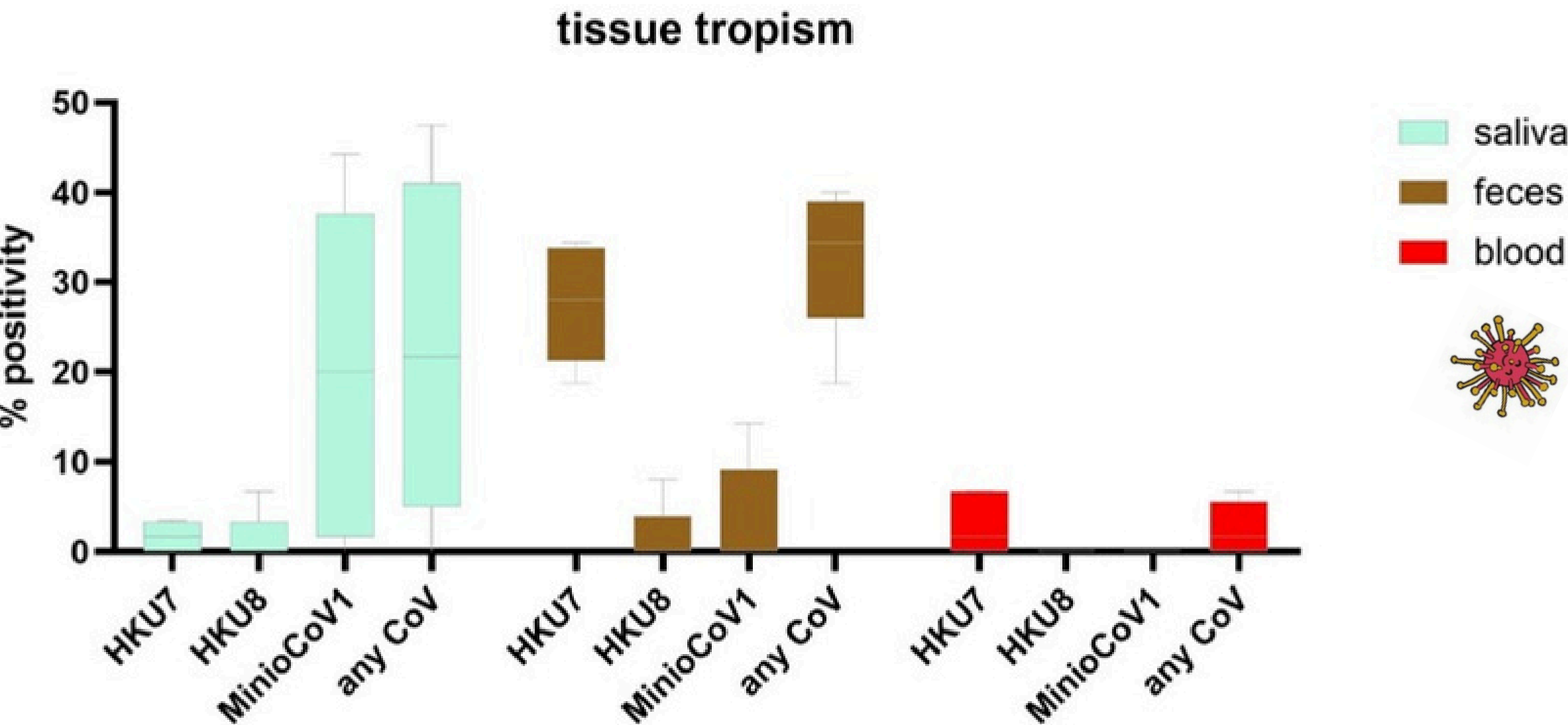


Harmonized longitudinal surveillance across 5 countries

Molecular detection of coronaviruses



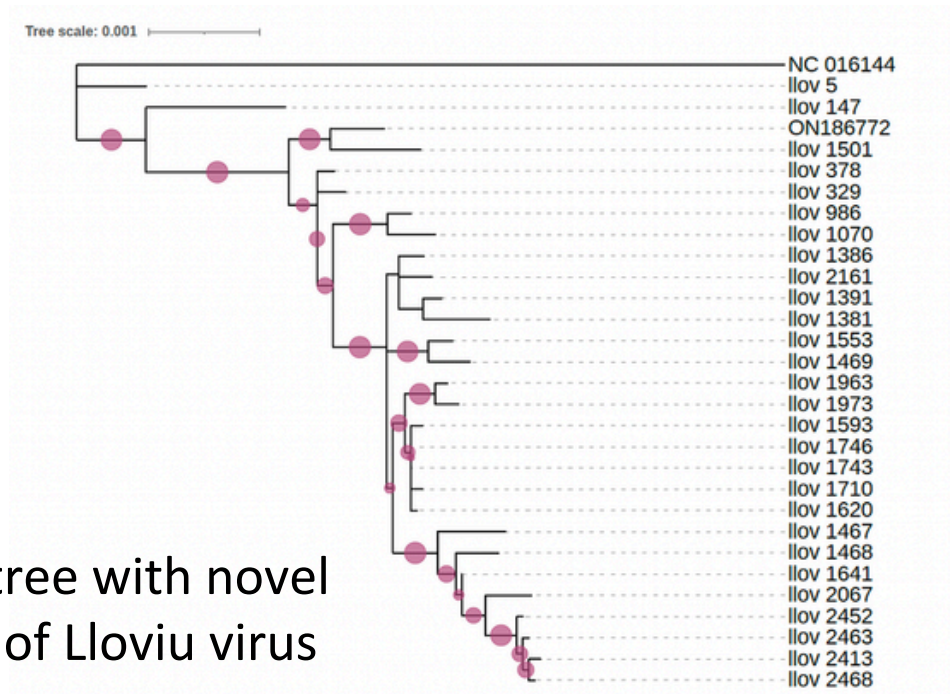
Harmonized longitudinal surveillance across 5 countries



New Lloviu virus sequences from Hungary show regional clustering, suggesting multiple strains circulate across Eastern Europe

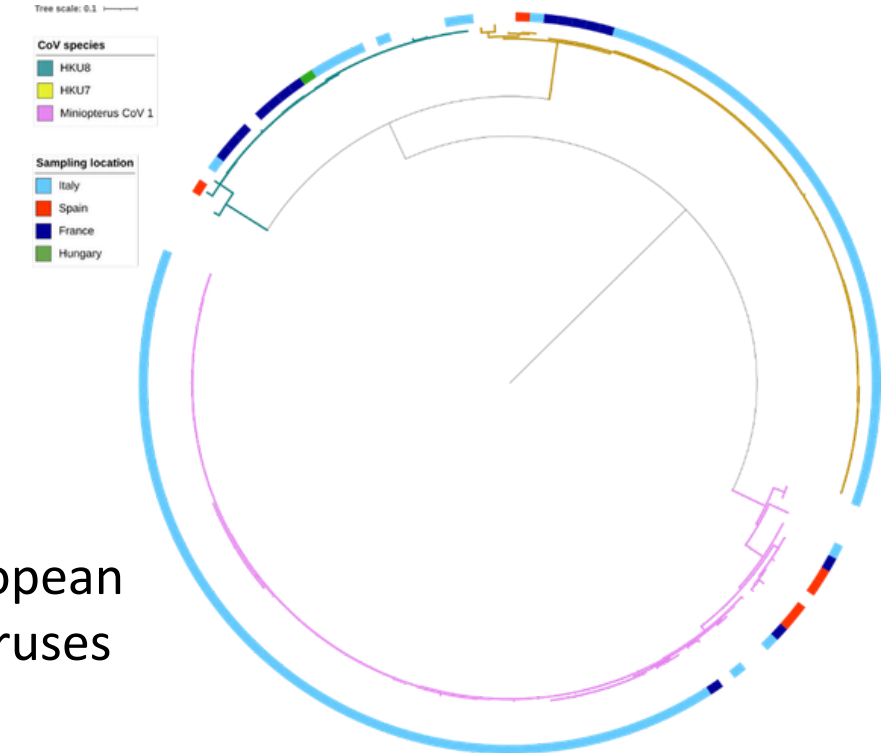


ML phylogenetic tree with novel sequences of Lloviu virus



ML phylogeny of European Minunacoviruses

Full genome ongoing for CoVs



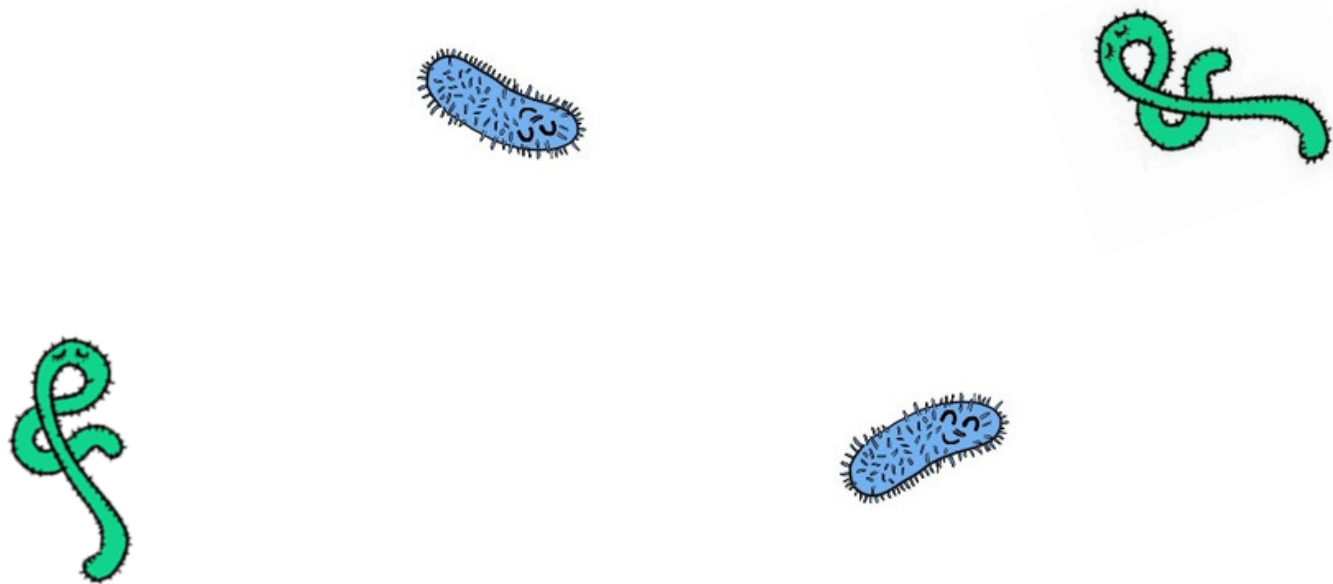
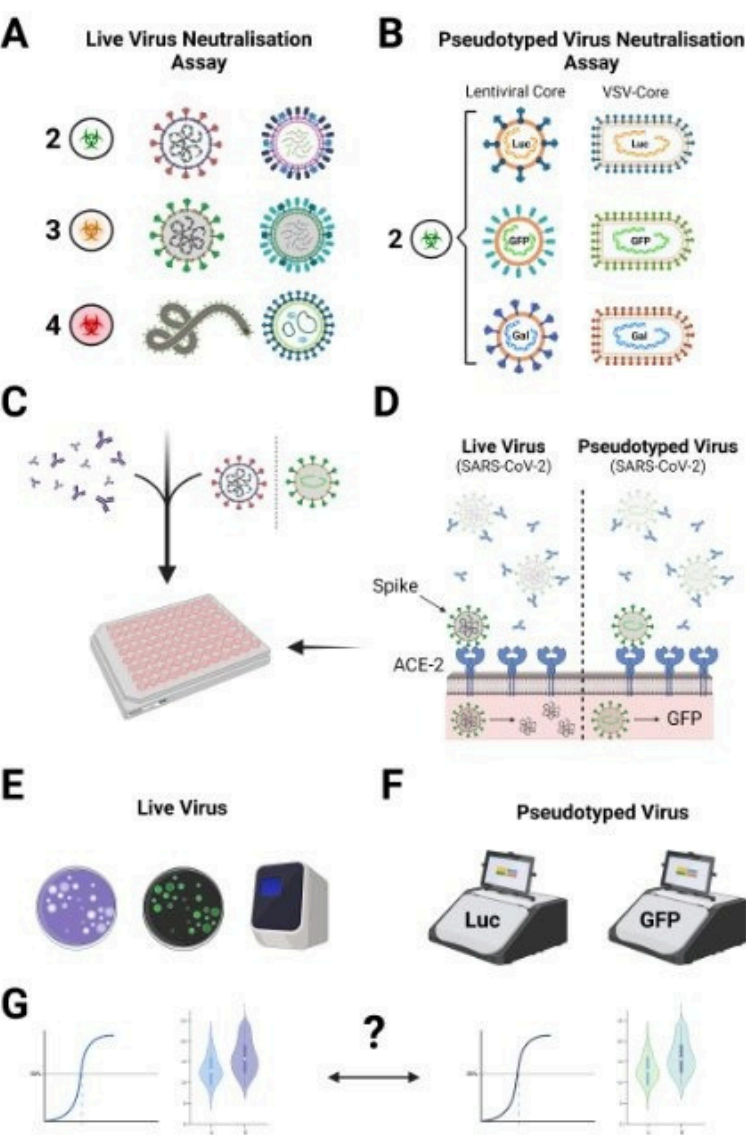


First results from three Spanish caves indicate that environmental sampling is useful to detect Coronaviruses.

No Lyssavirus nor Filoviruses detected confirming low shedding/low prevalence



Virus ecology - methodology

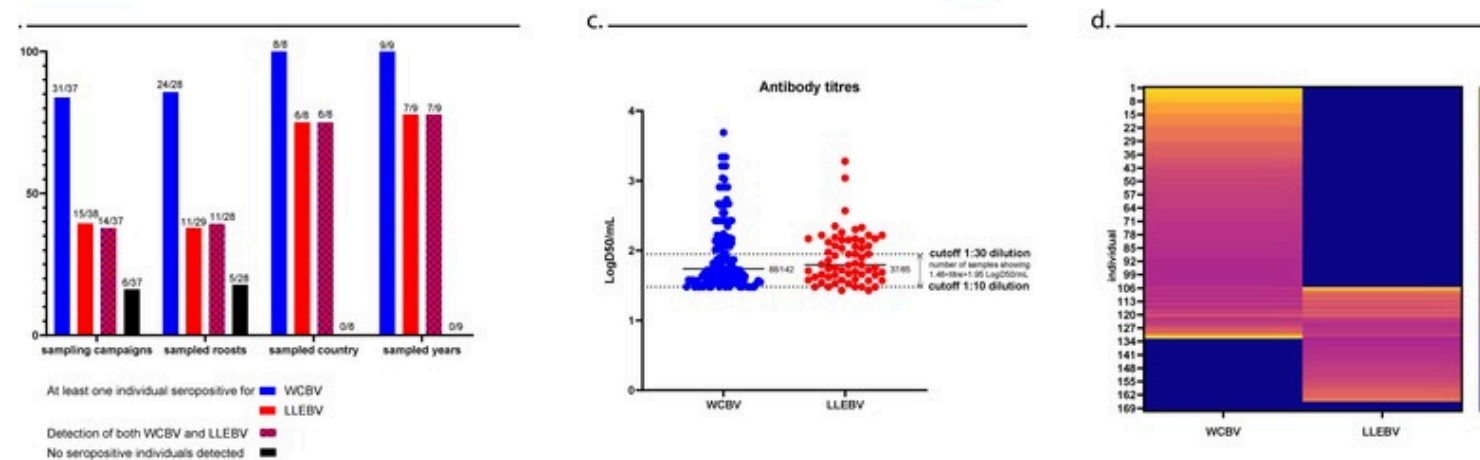
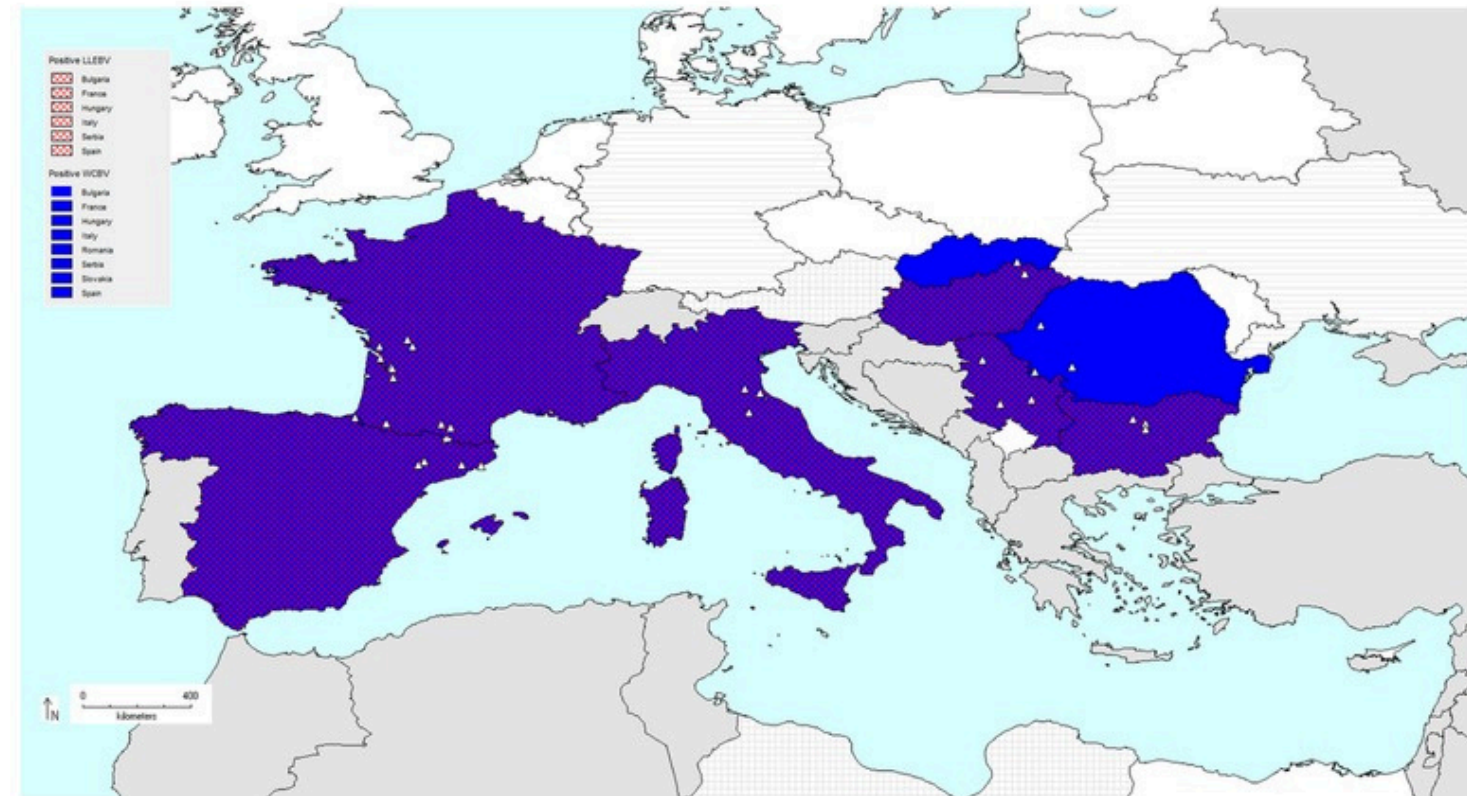
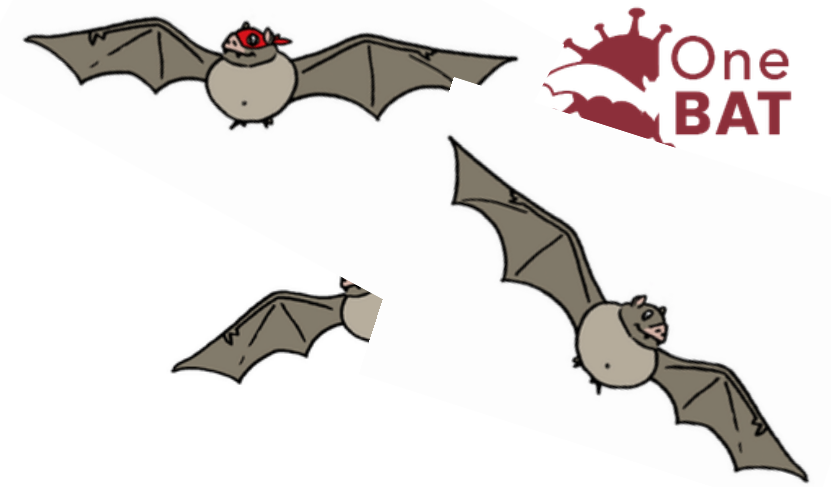


WP4

Methodological platform
Innovative serological assays



Preliminary data on the distribution of the

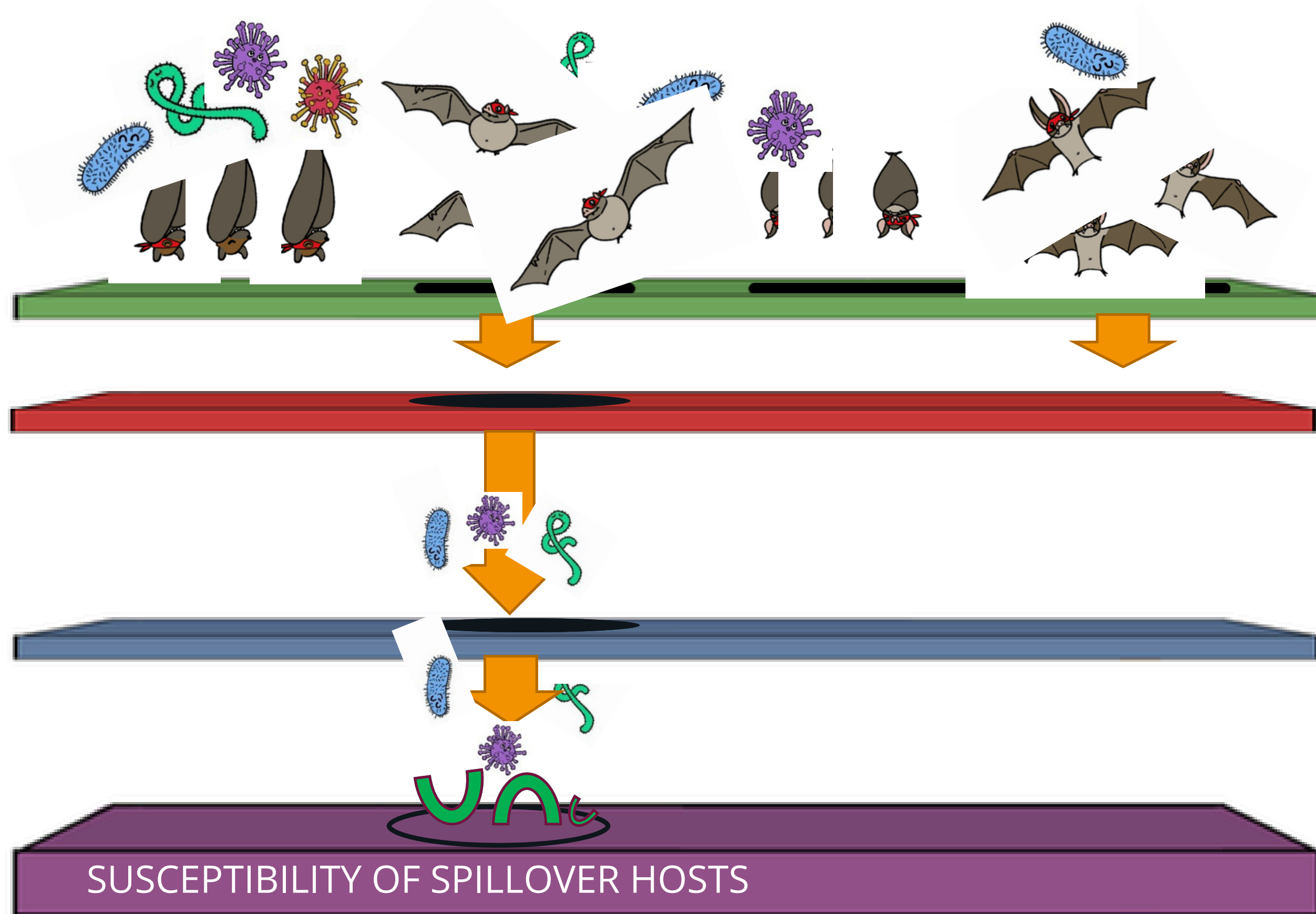


Leopardi et al., 2025



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Susceptibility and zoonotic potential



Gabor Kemenesi
WP3 Leader



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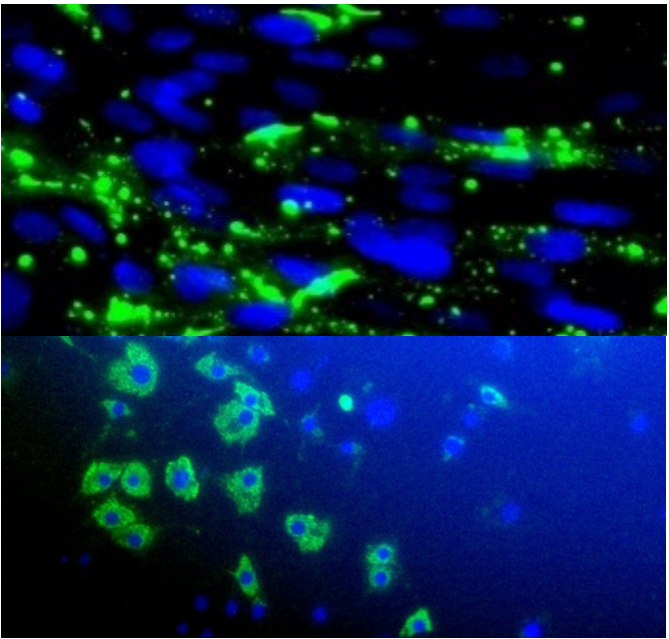
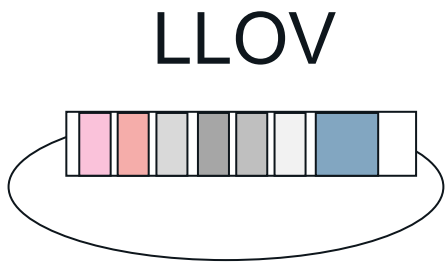
Host susceptibility

Evidence of exposure to pathogens

Host-pathogen interaction

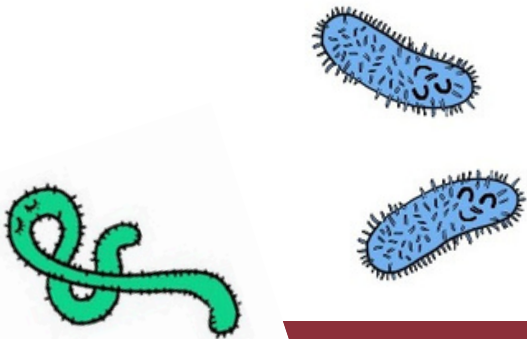
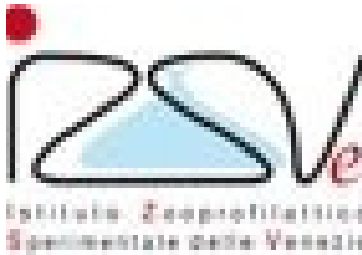
Therapeutic agents

WP4
Methodological platform
Cell substrate development
Reverse genetics system

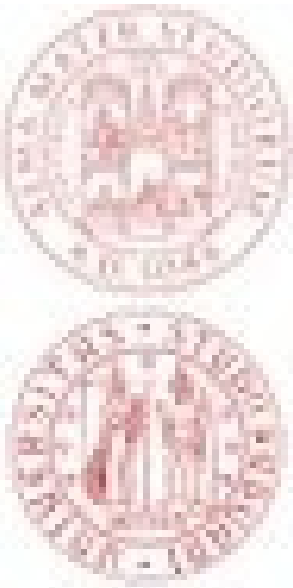


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Host susceptibility



Animal sera obtained from multiple sources

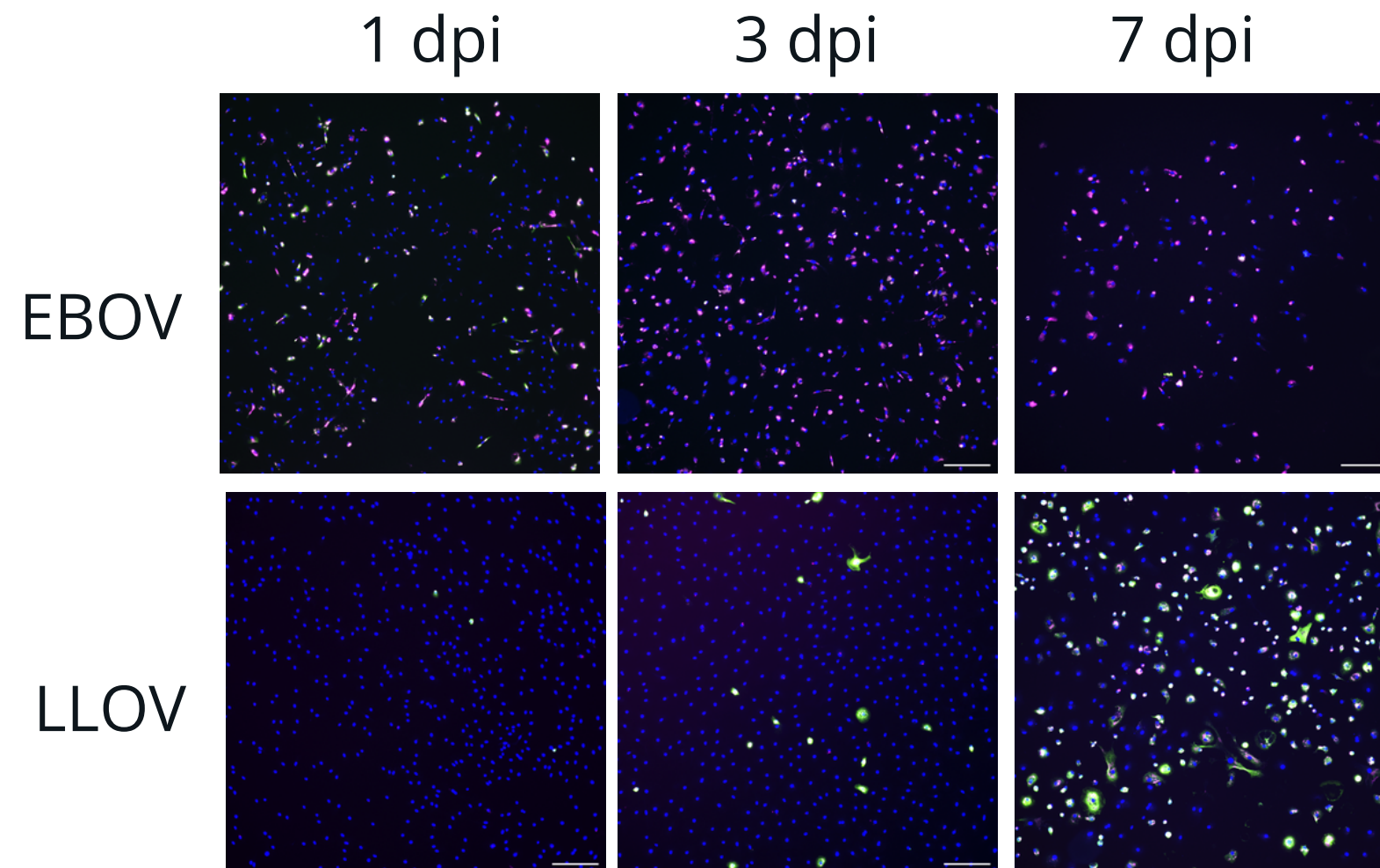


Testing lyssavirus antibodies negative for cats so far

Next steps testing in wild carnivores
 testing filovirus antibodies



Host susceptibility



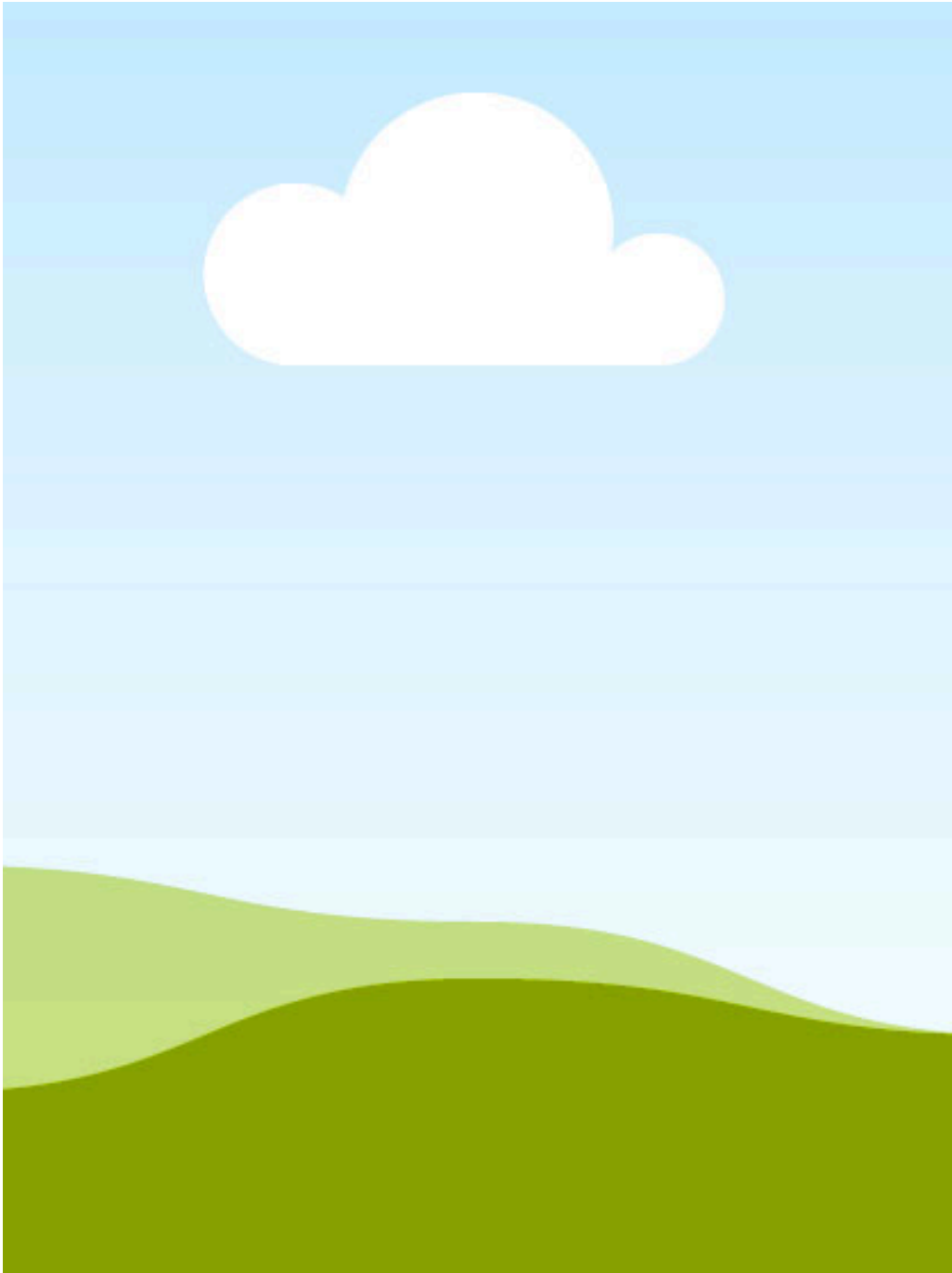
MDM (human), MOI 10, scale bar 250 μ m

Recombinant and wtLLOV Hungary replicates slowly in primary human monocyte-derived macrophages

Inflammatory responses are not induced in human macrophages



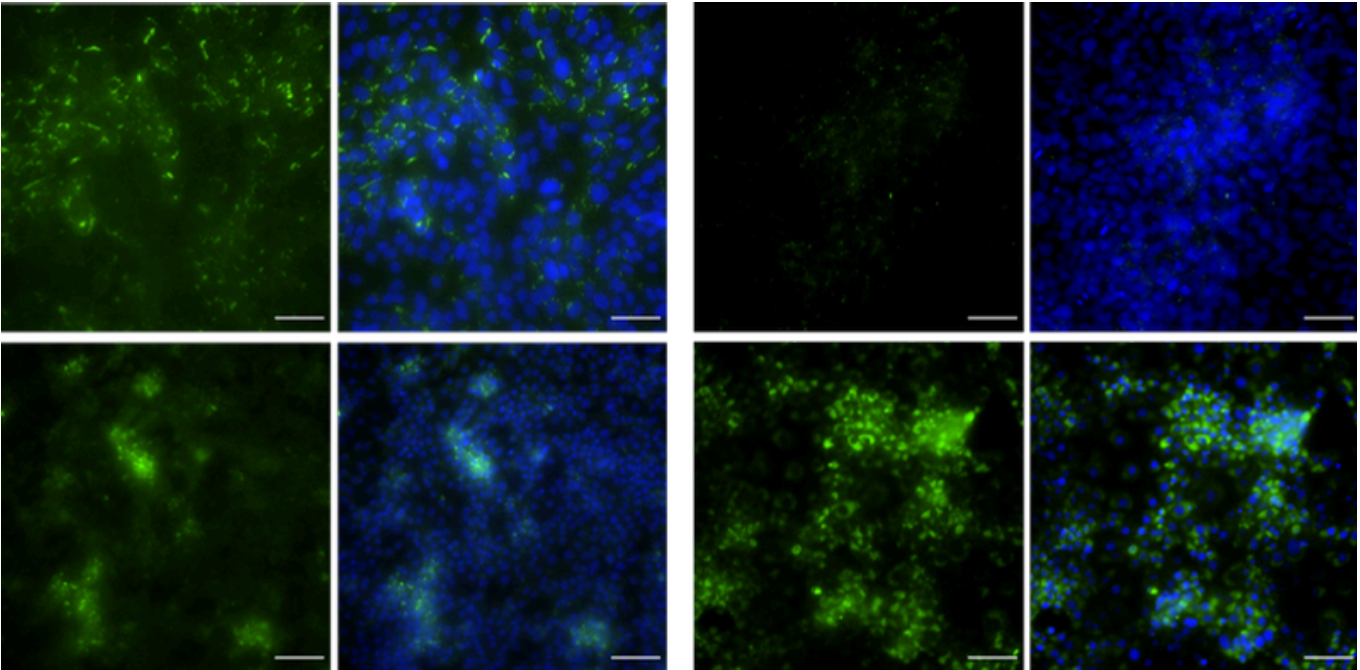
Host susceptibility



Lloviu virus infects *Miniopterus*, *Myotis* but not *Rousettus* fruit bat cells

RoNi 7.1
(*Rousettus*)

SubK12-08
(*Miniopterus*)



MOI 1, 2 dpi

MOI 1, 7 dpi

Scale bar,
50 µm

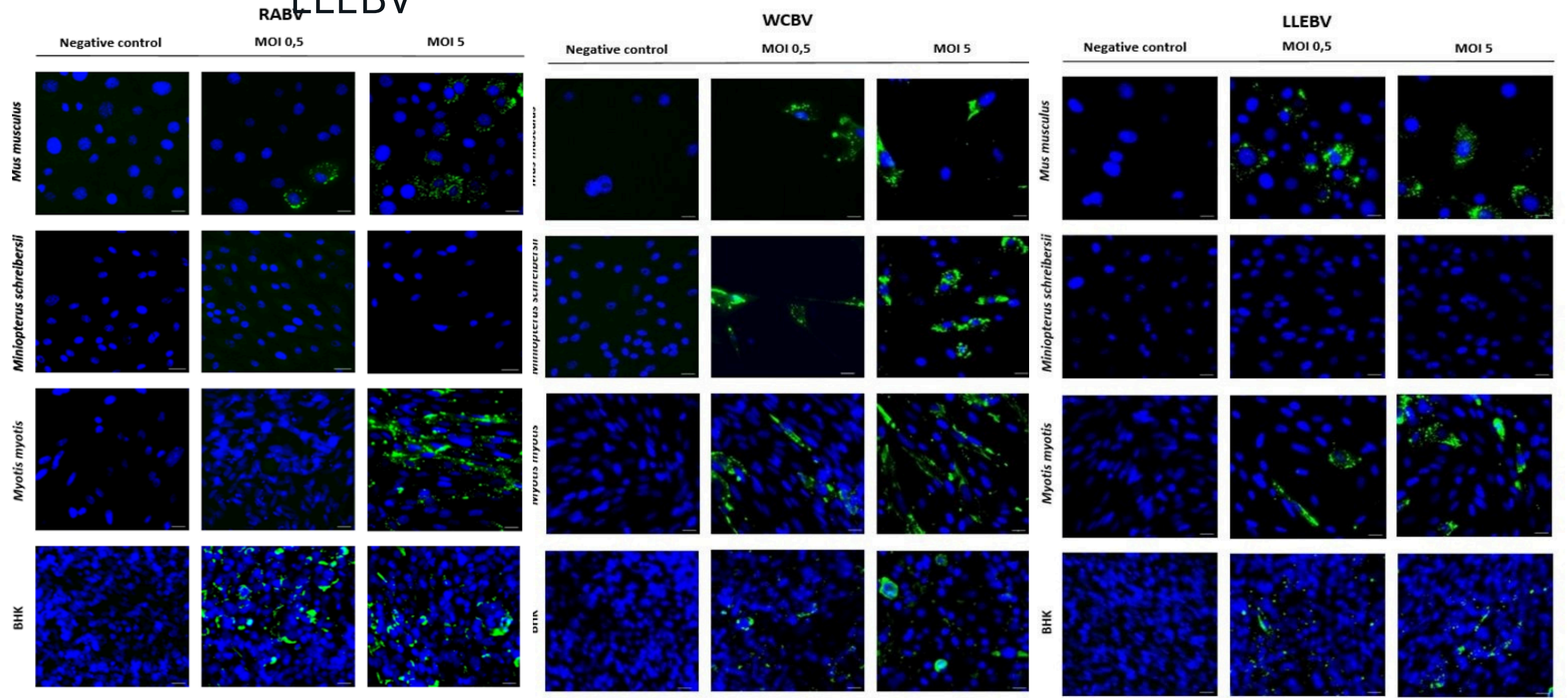
SubK12-08 cells: kind gift of **Ayato Takada**, Hokkaido University, Sapporo, Japan
RoNi 7.1: kind gift of **Christian Drosten** and **Marcel Müller**, Charité, Berlin, Germany

Some achievements and ongoing



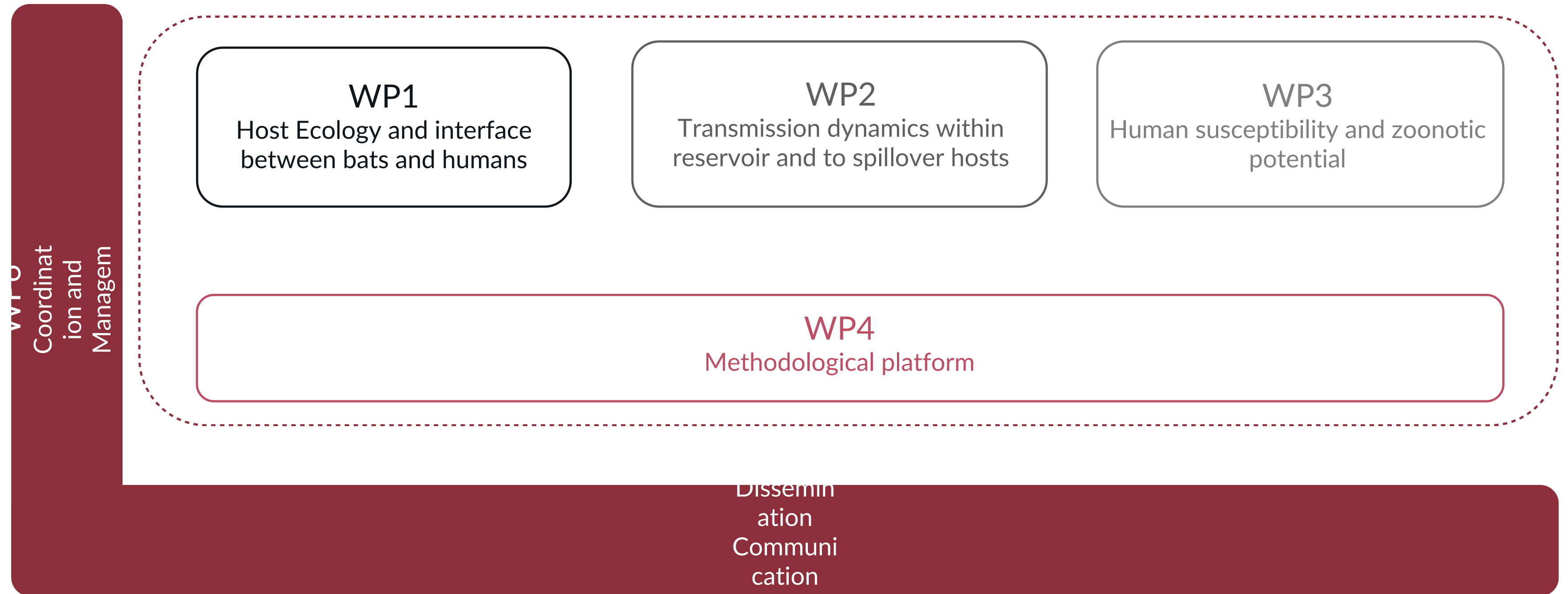
Host susceptibility

Miniopterus fibroblasts are infected with WCBV but no RABV or LLEBV



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WP4

Methodological platform



Laurent Dacheux
WP4 Leader



Pan-family/pan-genus tests

Pseudovirus establishment/development

Reverse genetics platforms (for CoVs and FiloVs)

Establishing innovative substrates for virus investigations

Web platform for consortium database



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OneBAT people



visit onebat.eu to see opportunities



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Webinars



OneBAT 1st Webinar

Tracking Bats Across Europe
New Methods and developments

Fiona Mathews

Teams Webinar
11th November 2024
12:00 - 13:00 (CET)

Participation is free of charge

Organized by:
University of Sussex

onebat.eu



OneBAT 2nd Webinar

Long-term Urban Bat Monitoring and Notes on the Effects of Full-scale War on Urban Wi

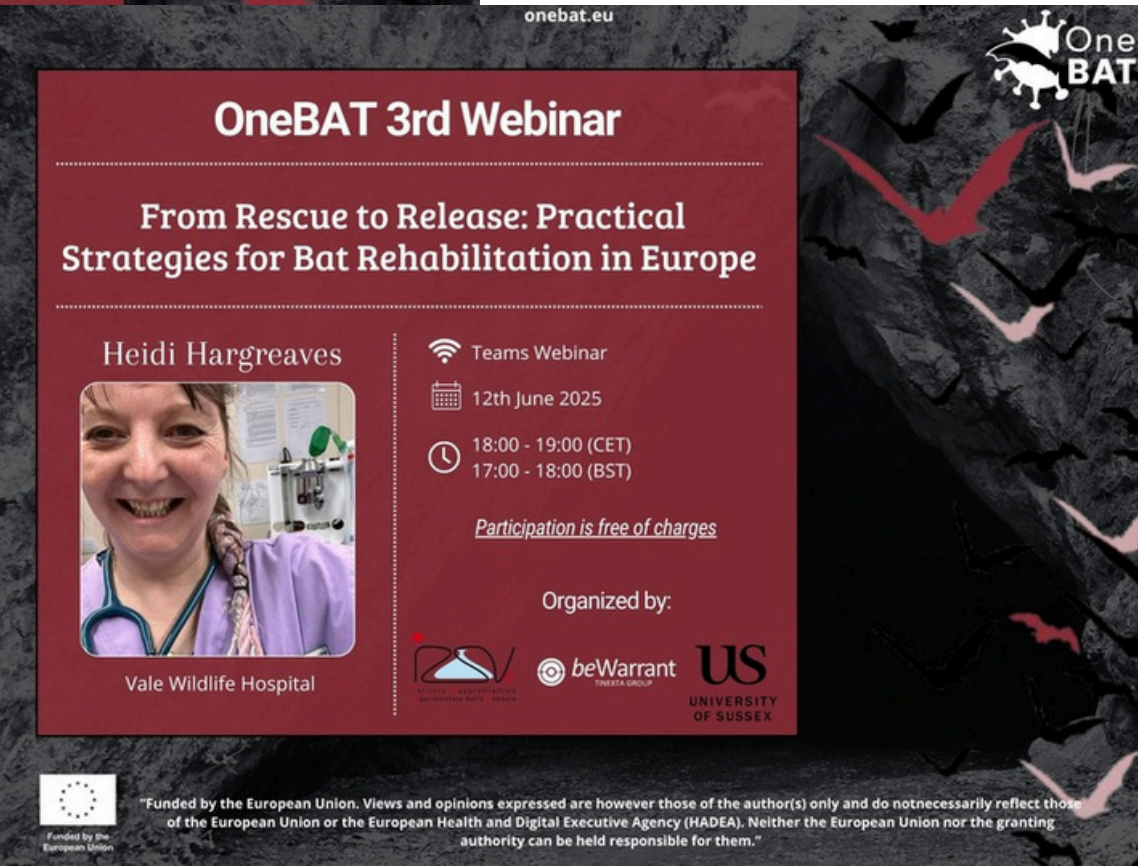
Anton Vlaschenko

Teams Webinar
28th February 2025
16:00 - 17:00 (CET)

Participation is free of charge

Organized by:
Kharkiv National Pedagogical University

onebat.eu



OneBAT 3rd Webinar

From Rescue to Release: Practical Strategies for Bat Rehabilitation in Europe

Heidi Hargreaves

Teams Webinar
12th June 2025
18:00 - 19:00 (CET)
17:00 - 18:00 (BST)

Participation is free of charges

Organized by:
Vale Wildlife Hospital

onebat.eu

Visit onebat.eu to find our initiatives

Training



SAVE THE DATES

Padua, ITALY | 19-21 May 2026

19-20 May
NRLs for Rabies Workshop

20-21 May
OneBAT training on bat sanitary surveillance

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